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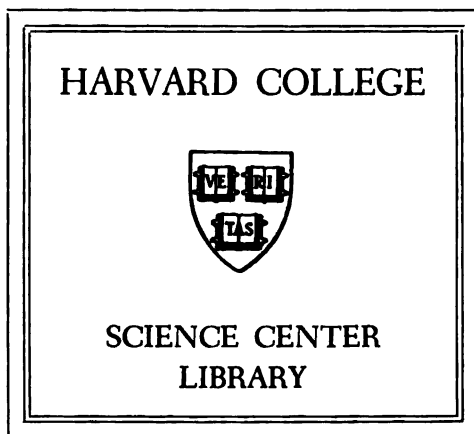
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ON AGRICULTURAL CHEMISTRY.

By M. P. JOIGNEAUX.

Agricultural chemistry is a science calculated to render immense service to cultivators of the land. Its object is the study of the various kinds of soils—it teaches us the localities in which particular substances are to be found: it indicates the quantity of each of these substances and their specific properties: it indicates at the same time the manures which we ought to employ for the purpose of giving effect to their formation. This plant—it demonstrates to us, requires such or such an aliment—plant it in a corresponding soil; manure it with such and such a manure in preference to any other; seeing that the manures to which preference is given contain certain elements which the others do not.

It is chemistry that renders evident to us the use that may be made of certain products of the soil: it is this science which has taught the manufacturer how to extract sugar from beet-root, alcohol from grain, vinegar from wood, potash from wine-lees, and fecula from potatoes. It is chemistry which demonstrates to us the means of preserving for the longest possible periods substances from both regions of the organic world. Lastly, it is chemistry which reveals the iniquity of adulterations.

"Agriculture," remarks Raspail with great truth, "is not yet a science: it is merely an empirical knowledge which calls experience to its aid, and which has scarcely one single axiom capable of serving as an infallible guide."

All this is true. Nevertheless, chemistry is beginning not only to reveal to agriculture the accumulative result of many centuries, but also the dawning developments of the present day. Every effect has its cause, which cause it should be the object of rational beings to unravel; otherwise every advance is but a step made in the dark, leading the adventurer into a labyrinth of error inextricable in its confusion. It is not sufficient to say the result obtained by use proves that such and such a cause is good or bad; we should also know wherefore it is good or bad; and it is chemistry alone that is competent to furnish us with the exact nature of the constituents of soils, of atmospheric influences, of the composition of manures, of the specific properties of each, and adaptability to particular genera of plants.

Chemistry will demonstrate to the cultivator the reason why vegetables do not indiscriminately accommodate themselves to one and the same pabulum; why one plant will greedily absorb an aliment which another refuses; why, for instance, the aliment most congenial to the cabbage tribe is least adapted to the vine; and hence the absurdity of offering a nitrogenous pabulum to a plant greedy of potash is just as great as it would be that of offering hay to a lion, or flesh to an ox.

At the same time that agricultural chemistry indicates to the cultivator the composition, exact or approximative, of the different soils comprised in his estate, it will also indicate with certainty, and free from haphazard, the best means of ameliorating them each in its turn, and of rendering them best adapted to the culture of special vegetable tribes. Just in the same manner as a physician must know the nature of his patient's malady, before he can bring to bear his remedial skill, so in like manner must the agriculturist learn the peculiarities of his soil before he can hope to improve it by manures. Chemistry, in a word, will unveil to him a host of resources before unknown, whether they concern preparations of the soil, application of manures, or economization of products.

As regards the classification of different soils, agriculturists are accustomed to range them under four divisions, designated respectively by the terms (1), black or free soils; (2), white, strong, or cold soils; (3), arid or dry soils; and (4), sandy or light soils.

Black earths, which are of the greatest advantage to the cultivator, are known by the following characteristics:—Ordinarily they occupy the lower levels of the ground, their aspect is more or less brown, which is occasioned chiefly by the presence of dark and decomposing animal and vegetable

débris. The thickness of such black alluvial or diluvial soil is usually much greater than we find to be the case with any other, and, in consequence of the proportions of their elements, such soils are more easily than any others susceptible of agricultural treatment and elaboration. Neither too light nor too stiff, they furnish mechanical conditions very favourable to the operation of ploughing and otherwise moving, whatever the weather may chance at the time to be.

Owing to the small amount of alumina which they contain, these dark alluvial soils do not, like the white or argillaceous soils, absorb and retain an undue amount of water; and hence it is that, however great the amount of rain may be, they never form a paste so tenacious as to offer great impediments to agricultural operations; whilst, on the other hand, soils of the aluminous or argillaceous kind not only form long ribbon-like clods before the ploughshare, but require the harrow for effectually breaking them up before they can in any way be adapted for the purpose of vegetation.

The variety of white or argillaceous soils is considerably less rich than those of which I have spoken; and as I have already remarked, are chiefly made up of alumina or an argillaceous matter; from the undue preponderance of which they have derived their name of *cold earths*. The name is well merited—seeing that, owing to their impermeability, water, instead of penetrating them to any considerable extent, merely forms with them a soft adhesive paste—a sort of mortar upon which both water and heat exercise an influence equally unfavourable to vegetation. As to the water, it remains a long time in the soil; and, as regards the heat, it so bakes up the argillaceous element that evaporation is rendered exceedingly difficult.

Arid or dry soils are ordinarily so divided and pulverulent that their management is a matter of no great difficulty. In them the leading element is calcareous matter, or, to speak more plainly, powdered limestone; though it is not alone to the presence of this material that their aridity is to be ascribed. This property also depends, and indeed most frequently, on the absence of humus or half-decomposed organic matters. Arid soils are to be found in which the calcareous element exists—though very sparingly; the quality of dryness being almost solely dependent upon the nature of the subsoil which supports them, and the small amount of organic materials which they contain. It by no means follows that a soil must be poor merely because it is arid or dry. Whether a soil be poor or not must be determined by reference to the particular crop which the cultivator desires it to produce. Plants which grow with facility and luxuriance on one soil are well known to pine and die if made to grow in another, a fact so well known that, upon the whole, I am induced to assent to the remark of Jacques Bujault "that a soil was just what man chose to make it." A soil, in fact, which possesses any considerable amount of depth is seldom unproductive, for any better reason than ignorance on the part of the agriculturist to adapt to it crops most congenial to its nature.

Last in the scale or table of classification come the light or sandy soils, which are the most uncongenial of all. The merest glance, the slightest touch, is sufficient to distinguish them. They are either exclusively made up of calcareous or siliceous sand, or a mixture of both in variable proportions. When not rendered fixed by the presence of organic matters they are shifting and barren.

In the four great classes which we have thus established, every kind of soil which comes under the notice of the cultivator may be placed; but, inasmuch as even the most accurate observer of external characteristics must fail to acquire an exact acquaintance with the nature of soils from mere physical peculiarities, it is necessary to have recourse to chemical analysis—a task comparatively easy, since, thanks to those who have gone before us, we already know what substances enter into the composition of soils that are susceptible of vegetation. These substances are ordinarily calcareous matter, or carbonate of lime, alumina, silica, magnesia, vegetable or animal débris, certain metallic oxides, certain alkalis indispensable to vegetable constitution—and water. These are all, or nearly all, the substances which present themselves, but in varying proportions, in soils devoted

to culture. These are the elementary or constitutive substances, which we will now study in detail. After their properties are well known—after, by the aid of chemistry, we know also their relative proportions—then the greatest difficulty in the way of the intelligent agriculturist will be overcome.

PROGRESS OF SCIENCE AT HOME AND ABROAD.

TRANSACTIONS OF SOCIETIES, COMMUNICATIONS, &c.

BRITISH ASSOCIATION.

No one has been more consistently strenuous in deprecating the neglect of British scientific professors than Sir David Brewster, the late president of the British Association. His valedictory address delivered at Ipswich was too severe on our present Ministry to suit the tastes of most journals. We regret our inability to give it entire, and must content ourselves with the following extracts:—

"Gentlemen of the British Association,—In opening this, the 21st meeting of our association, the principal duty which I have to discharge is to divest myself of the official dignity which you have been pleased to confer upon me. If I shall occupy a little more of your time than this duty requires, I trust you will find an excuse in the peculiar circumstances under which we are now assembled.

"The year in which I have presided over this institution is one that will be memorable in the history of English science. If it shall be painfully remembered by the disappointments which it has brought us, it will be remembered with exultation by the triumphs which it has secured. If a British Minister has given a blow to our hopes, a British Prince has revived them. Anxious, perhaps morbidly anxious, for the advancement of British science, and for the intellectual glory of my native land, I have been in the habit of freely expressing my opinions on the neglect of science—of its cultivators and of its institutions—by men in power. I have thus spoken in their presence—I have thus spoken in their absence. I have transmitted my views directly to themselves; I have addressed the same views to the public; and, as drops of water finally excavate the stone on which they fall, it was not surprising that the gentle dew-drops of argument and reproof should have made some impression upon still harder materials. Thus, infinitesimal in their magnitude, these influences became visible by their integration. The deep interest taken by one Minister in the cause of science, and the apparent disposition of his successor to throw some crumbs from the ministerial table, indicated changes which, at our last meeting, we were eager to praise, and excited hopes which we were anxious to realize. We flattered ourselves, indeed, that statesmen had given ear to the voice of science crying in the wilderness, and that we were on the eve of securing the fundamental object of the British Association—of obtaining, from the Government, 'a more general attention to the objects of science, and the removal of those public disadvantages which impede its progress.'

"These hopes, as it is now my painful duty to announce to you, have proved delusive.

"In consequence of the discovery of new planets and new satellites, and new forms of nebulae, by the unaided exertions of astronomers, the British Association, at two of its meetings, resolved to apply to Government for the means of constructing a large reflecting telescope, to be employed in a southern climate for the advancement of astronomy. In making this application, our late distinguished president, Dr. Robinson, informed Lord John Russell that an assembly of upwards of 1500 persons, among whom were found almost every British name of scientific renown, had received this proposal with enthusiastic approbation. Dr. Robinson assured his lordship that such a grant was demanded by public feeling, and that it belonged to the rulers of the freest and most enlightened nation in the world to give that encouragement to physical science which the spirit of the age had obtained

from the most despotic sovereigns of Europe. The Earl of Rosse and the Royal Society seconded this application, and, as no preceding Government had refused any of the requests of the British Association, we looked forward with confidence to the realization of a scheme which would have added to the conquests of science, and thrown a fresh lustre over the British name.

"I regret, however, to say that in a year of great financial prosperity this application has been refused; and as it is not possible that, in matters of science, any secret or sinister influence could affect the judgment of a statesman, we must suppose that Lord John Russell has some better object in view to advance the interests of science and promote the intellectual glory of the nation.

"Such is the disappointment to which I referred,—such the blow which has been struck against the science of England. Severe as it is we must not allow it to paralyze our efforts to obtain the object we had in view. Governments do not last for ever, and time never fails to crush prejudices that are inveterate, and illuminate minds that are obscured. Hearts the most callous may yet be chafed into sensation, and a British Minister may yet arise who shall apprehend the national value of science, and vindicate the intellectual rights of his country."

Adverting to the melancholy vaticinations which ushered in the existence of the Crystal Palace, the President went on to say:—

"Influenced, no doubt, by such forebodings, even stout hearts were taught to quail; but there were, at least, two, of princely mould, that, however anxious about the issue of this noble experiment, were sustained by the greatness of the object, and the grandeur of its results. They must have felt that the institutions of science and of education never die. Rising, perchance, slowly, they rise securely. Selfish governments may frown upon them, and selfish men under-rate them. Power even may oppress, and wit may sneer; but God never permits an idea that is great and good to be lost. The spire even of his temple which rises too proudly, and the buttress on which it leans too securely, may be struck by the bolt from above; but the low-lying altar of truth has ever been spared. In his hour of presumption, indeed, man was not permitted to reach the heavens with his cloud-capt tower of stone, but it was given him to ascend into the empyrean by chains of thought which no meteor could fuse, and which no comet could strike; and if we have not been allowed to grasp with an arm of flesh the products of other worlds, or tread upon the pavement of gigantic planets, we have been enabled to scan, with an eagle's eye, the mighty creations in the bosom of space, to march intellectually over the mosaics of sidereal systems, and to follow the adventurous Phaëton in a chariot which can never be overturned."

Like many others, Sir David sees in the Industrial Exhibition evidences of future universal peace:—

"It is not easy to believe," he remarks, "that nations which have embraced each other in a friendly intercourse, in the interchange of social kindness and of professional knowledge, will ever recognise any other object of rivalry and ambition than a superiority in the arts of peace. It is not likely that men who have admired each other's genius, and borrowed each other's light, and given just judgment on rival inventions, will ever again concur in referring questions of national right and national honour to the sanguinary arbitrement of war. Among the thousand instruments which hang beneath every banner that waves in the Crystal Palace, there is one which, though but spiritually discerned, escapes no eye and excites no envy. It is the calumet of peace—the little emblem of that universal brotherhood which, we trust, is about to dawn upon distracted and divided nations.

"Distant, however, as so cherished an epoch may be, and doubly distant as it may appear when we open the chronicles of blood and of crime, it is yet delightful to view it even from afar, and to trace the steps by which we may approach it. Of these steps the speediest and the safest will be found on that wise and just legislation which extends the liberality and honours of the state to every class of merit, and which unites the sovereign with the subject by the ties of mutual affection and regard. In our own happy land we may truly

say that the last of these conditions has been realized. The first awaits the advent of an enlightened Government with which our country has not yet been blest. The Exposition of 1861 has, of itself, and more than any event in the history of England, formed a chain stretching from the palace to the workshop and the cottage. A Sovereign instructed and intelligent, holding as it were her court among thousands of her people, and studying the scientific and the useful arts in the same school with the humblest of her subjects, is a sight as new as it is dear to Englishmen. Prophetic of the future, we see in this the best security for the promotion of science, and the realization of those objects which the British Association has striven, though too feebly striven, to advance. The guardians and the counsellors of an enlightened throne must be themselves enlightened; and we trust that no statesman will be entrusted with the destinies of England who has not resolved to unshackle inventions and knowledge, to organize our literary and scientific institutions, and to place the intellectual chivalry of our plan on the same level with those who enrich it with their wealth, and defend it with their arms.

"To you, gentlemen of the British Association, I bequeath these sentiments. They are the last which I can ever address to you. In such a cause, and looking to the interests of those who are to succeed me in the labours of science, I might bespeak the assistance of those who cultivate science in the sunshine of official position, or who are able to devote their undivided energies to its study, but I have not found that they have much sympathy with their brethren who pursue science under difficulties, sacrificing professional wealth and honour on its altar. That philosophy, gentlemen, is not genuine which does not embrace in its philanthropy even its own children; and that soul, even if it has the wisdom of the serpent, is but a creeping thing if it does not soar above the level of its own interests, and feel beyond the lust of its own fame. I must appear, therefore, to you, whom the love of knowledge and the voice of fame have allured from the temple of Mammon, or who have been familiar, as I have had occasion to be, with genius impoverished, neglected, and dishonoured, toiling for subsistence in the day, and for fame in the night, and sinking often under those intellectual efforts which a feeble and sensitive constitution is unable to sustain."

ON THE TRANSMUTATION OF BODIES.

By Professor DUMAS.

The business of the Chemical Section was opened on Friday, July 4, by Dr. Faraday, who read a short communication on behalf of M. Bergemann, of Bonn, introducing to the notice of the association a new metal—or rather the hydrated oxide of a new metal, called Donarium.

M. Bergemann had not sent the metal itself, fearing it would get oxidated during its passage here: he had preferred to send the hydrated oxide, which might easily be converted into the metal by any one who was desirous of so doing. Donarium, it appears, scintillates before the blowpipe, and in this respect bears an analogy to iron. If ignited it ceases to be soluble, except in sulphuric acid; and in this feature bears an analogy to cerium.

During the discussion on the properties of this metal, which discussion was not long—Mr. Faraday said he was almost sorry to welcome any more metals; they fell on us like asteroids, and confused our reckonings; his hopes were in the direction of proving that bodies called simple were really compounds, and might be formed artificially as soon as we were masters of the laws influencing their combination. These remarks were intended as an introduction of M. Dumas, who was announced to read a paper on certain relations between volume and atomic weight—reading it probable that certain bodies called simple were really compounds.

M. Dumas rose, and, after a graceful allusion to the freedom of English scientific men from scientific prejudices, said he would enunciate certain views over which he had speculated many years ago, whilst he was a labourer in the field of

chemistry, and before he had been launched on the waves of politics.

M. Dumas had no paper; his discourse was unaided even by a note; but a narration so unhalting, a chain of reasoning more consequent, more lucid, more convincing, was not brought before the association. M. Dumas commenced with some very simple facts. He adverted to the different amount of solubility in water of lime, baryta, and magnesia. All were sparingly soluble in water, but the last, magnesia, the most sparingly of the three.

Each substance was capable of uniting with sulphuric acid to form a sulphate. Of these three salts the sulphate of magnesia was the most soluble, yet magnesia itself was the most insoluble of the three bodies. Sulphate of lime was sparingly soluble in water, and sulphate of baryta quite insoluble. Why was this difference of solubility? Is there any reason to be offered? Must chemistry remain a crude assemblage of such undigested facts?

A reason could be offered, and was seen in the fact that the solubility of a compound was in a direct ratio to the condensation of the substances entering into its formation.

He had hitherto spoken of sulphates for the purpose of illustrating the law; but other examples quite as pertinent might be discovered. Thus there were two chlorides of mercury—one soluble in water, the other insoluble. Here again it was found that the insoluble compound was the product of major—and the soluble one the result of minor—condensation. Chemical agency, M. Dumas went on to say, was the result of a force; which force was at once indicated and measured by combining or atomic numbers—which were in inverse ratio to their power of chemical agency. Thus the atomic or combining numbers of chlorine, bromine, and iodine, were respectively 35, 80, 126. Of this triad, chlorine would displace bromine; bromine would displace iodine. The three bodies, too, displayed, other symmetrical gradations. Thus chlorine was most volatile, and iodine least; bromine being intermediate; and, as a consequence of the last deduction, chlorine was least dense, iodine most, and bromine intermediate.

Thus we have a triad or series of three bodies displaying under three several aspects a symmetrical gradation. As chemistry becomes better developed it subjects itself to the scrutiny of mathematical investigation. Can mathematical investigation be applied to the triad, of chlorine bromine, and iodine? And, when applied, does it give a result accordant with incipient speculation? The atomic numbers of chlorine, bromine, and iodine, evidently supply us with the fairest data on which to exercise our calculations. These numbers cannot be feigned or strained: they have long been in existence—long before the ideas of M. Dumas were enunciated. Now, if there be any truth, in the speculations of M. Dumas, the atomic or combining numbers of the three bodies in the triad being taken, half the sum of the extremes should be equal to the mean; or half 35, the atomic number for chlorine plus half 126, the atomic number for iodine should equal 80, the atomic number for bromine. And this, indeed, is the result, as will be evident on reference to the following simple arithmetical sum:—

Atomic weight of chlorine	35
" " of iodine	126
Sum	160

Half that sum $\frac{2160}{80}$ is the atomic weight of bromine!

"Thus it follows," to use the beautiful expression of M. Dumas, "if we could by any means cause the union of half an atom of chlorine with half an atom of iodine, we might hope to get, to form, to create, an atom of bromine!"

We will not here stop to cavil at the impropriety of assuming the division of an atom, which, according to its derivation, a *temple*, cannot be divided. We accept the term as a poetic license of most innocent description; and as not by any means disturbing the beautiful train of reasoning which M. Dumas has exposed to our gaze. Had the term equivalent been used all verbal objection would have ceased.

There are floods in the region of philosophic speculation, no less than in the commoner affairs of men. There was once

a flood of alchemical aspirations : since then there has been a flood of counter operations so strong, so violent, so overwhelming, that he, indeed, must be a venturesome man who would stand up against it. Very few people would have dared to enunciate the speculations that M. Dumas has propounded with regard to the transmutation of bodies ; very few could have done it, for fear of overstepping that little demarcation which stands between the ridiculous and the sublime ; but M. Dumas having enunciated *his* speculations, Dr. Faraday comes forward and says not only has *he* dreamt and thought—but tried experiments at transmutation, and professes himself so delighted with the doctrines of M. Dumas that he will, if his life be spared, try again.

Leaving the triad of chlorine, bromine, and iodine, M. Dumas next took up for the purpose of investigation a second triad, of sulphur, selenium, and tellurium ; bodies which all chemists know to be isomeric—or capable of replacing each other in compounds, and to be endowed with properties mutually analogous. Of the three, sulphur is the most volatile, selenium next, tellurium least of all. As to their decomposing power, sulphur replaces selenium ; selenium, tellurium ; in short, the remarks already applied to the triad of chlorine, bromine, and iodine will apply here.

Do the generalization of M. Dumas apply? We will see.

The atomic or combining weight of sulphur is 16 ; of tellurium 64 ; the half of the sum of these extremes is the number 40 :—and this is the exact atomic weight of the middle term of the triad—the atomic weight of selenium !

Take, again, the triad calcium, strontium, and barium. Without stopping to indicate the various analogies of these bodies it will suffice to point out their general chemical similarity. In this scale of analogous qualities calcium and barium are the extremes, strontium is the mean. The atomic weights of the three are as follow :—

Calcium, 20.
Strontium, 44.
Barium, 68.

And it will be evident at a glance that there is here a harmony between the chemical qualities and mathematical exponent of their combining proportion as before ; for 68 plus 20 divided by 2 is equal to 44, the atomic number of strontium. Thus, if, to use the expression of M. Dumas, by any means we could effect the union of half an atom of barium with half an atom of calcium, we should have as a resultant one atom of strontium !

Let us take now another triad :—

Lithium, 7.
Sodium, 23.
Potassium, 39.

The similarities between the properties of these bodies is too evident to be pointed out ; of the three, lithium is the least individualized alkaline metal ; potassium the most individualized ; sodium, as all know, stands intermediately between the three ; and here again, as the most casual examination will demonstrate, the same parity of chemical and mathematical symmetry holds good.

Now, so extraordinary a symmetry of chemical qualities with mathematical exponents can scarcely be assumed to be a matter of chance ; still less can it be said that the atomic figures on which these deductions are based have been strained to suit the opinions of M. Dumas. Before an atomic quantity becomes classical, it is exposed as we all know, to the rigorous scrutiny of many independent chemical tribunals. If, then, exception be taken to the theory of M. Dumas, this exception cannot be allowed to extend to his facts. In theory all may err, and M. Dumas amongst the rest ; we confess, however, we are not so paralyzed by standing opinions as to fear to think with him.

Hitherto we have followed the philosopher through his excursion among inorganic triads. We will now attend him further still into the recesses of chemical philosophy. It will be familiar, we doubt not, to most of our readers that many chemists, M. Dumas amongst the number, have regarded certain bodies of compound nature as analogous in many properties to the metals.

Of this kind are the three organic radicals :—

$C^2 H^3 O$
 $C^4 H^6 O$
 $C^6 H^7 O$

which may be regarded as three several oxides of an isomeric triad, bearing analogy to those already adverted to in the inorganic world. Now, the slightest examination here will prove again that the law hitherto applied holds good in this case. Omitting the oxygen in the three preceding substances, half the sum of the extremes will be equal to the mean. Indeed M. Dumas sees in these manifestations a general law, which may be thus expressed :—When three bodies having qualities precisely similar, though not identical, are arranged in succession of their chemical powers, there will be also a successive arrangement of mathematical powers, indicated by the respective atomic numbers of the substances ; and amenable to every mathematical law.

That this symmetry of chemical with mathematical function points to the possibility of transmutation is unquestionable—yet not transmutation in the sense of the old alchemical philosophy. Chemists see no manifestations of a tendency of being able to convert lead into silver, or silver into gold. These metals are not chemically conformable. One cannot take place of another by substitution. They do not form an isomeric group. The probability is that our first successful transmutation as regards the metals will effect the change of physical state merely without touching chemical composition ; thus, already, we have carbon, which, as the diamond and as charcoal, manifests two widely different states. Sulphur also assumes two forms, as also does phosphorus. Then why not a metal? This sort of effect M. Dumas suggests will be amongst our first triumphs in the way of transmutation.

In conclusion, M. Dumas cited in support of his theory the fact that bodies of conformable qualities were generally found in union or proximity, whether as presented by nature or formed by the agency of man.

Thus, with iron there is associated manganese. Where nickel exists cobalt is not far off ;—and in the organic kingdom, when man elaborates alcohol, there are simultaneously formed small amounts of ethereal bodies. Wherever viewed, chemistry is full of the startling coincidences now introduced to our notice for the first time by M. Dumas ; and, whatever may be the difference of opinion as to the speculative notions of the philosopher, there can be no doubt that he has opened a wide store of chemical treasure.

ON THE CHEMICAL NOMENCLATURE OF ORGANIC COMPOUNDS.

By Professor DAUBENY, of Oxford.

The object of this paper was to point out certain inconsistencies and anomalies in the received method of classifying and naming organic compounds, and thus to induce chemists to agree upon a set of rules calculated to render our chemical vocabulary more precise.

After alluding to Gmelin's Nomenclature, which he condemned as too intricate and difficult, the professor proceeded to point out the meaning attached to the several terminations of chemical terms, by which other chemists have attempted to indicate the class or type to which they severally belong.

In order to introduce somewhat more of precision into their method, he submitted to the section the following suggestions, amongst others :—

That the term *Hydrocarbon* should be confined to the compound radicals.

That the term *Ether* be restricted to the oxides of the respective compound radicals, and that the " component ethers" should be named on the same principle as salts are, by terms expressive of their respective acids and bases.

That the termination *yle* for Liebig's compound radicals, and *ene* or *en* for carbo-hydrogens, with equal atoms of the two elements, be retained.

That to the vegetable alkalies produced by natural processes the termination *ine* should be confined ; and to those

artificially produced by substitution of hydrocarbons for the hydrogen atoms of ammonia that of amine.

That the names proposed by Hoffman for the alkaloids of his own discovery should be abbreviated by introducing only the first syllable of the same expression of each of the hydrocarbons present in them.

That the termination *amide* be retained merely for bodies formed by the replacement of the hydrogen atoms when they are not alkaline.

That the terminations *am* and *an* should be employed in a more definite sense than heretofore.

That the termination *ethane* should be used for those compounds of ether, only, into which an acid does not enter.

That the terminations *one* and *ole* be respectively confined, the former to bodies produced from acids by the abstraction of one atom of carbonic acid, and the second by that of two atoms, so that the latter should not be adopted to indicate the essential oils.

That when a name expressive of the composition of a body cannot be constructed, one should be formed having reference to some obvious physical or chemical property, and of which the Latin term can be readily apprehended.

That bodies produced by natural process should in general bear a name recalling the source from whence they are derived.

And lastly, that although bodies belonging to the same class or type should in general bear the same termination, yet that, when a substance familiar to us be found to belong to some particular type, its designation ought not to be altered to bring it into bearing with the rest of the group.

ON THE VITALITY OF SEEDS. By PROFESSOR HENSLOW.

The communication of this gentleman on the vitality of seeds was confined to verbal exposition. It had reference to the reports annually made by a committee of the association, who have been experimenting for the last seven years upon this question. The chief observation of popular interest was his expression of opinion that the evidence on which the various so-called mummy-wheats now in the market are considered to have been raised from seed obtained from the catacombs was insufficient. It has been ascertained that in some cases the samples brought from Egypt had been adulterated by the natives, who had added fresh wheat, and even seeds of maize (a plant of the New World), to those obtained by them from the catacombs. Their practice of making up mummies for sale, and the possibility of a few recent seeds getting entangled in the wrappings of such as were genuine, was pointed out.

PROPOSITION FOR A NEW GEOLOGIC NOMENCLATURE.

By M. CONSTANT PREVOST,
Professor of Geology, à la Faculté des Sciences de Paris.

The propositions of M. Prevost are as follows:—

1. In scientific language, technical expressions should not be used except to designate objects or to express determinate ideas.

2. It is contrary, no less to logic than to reason, to use the same word to indicate different things, or to apply different words to one and the same thing.

These principles are, however, violated by the greater number of geologists in their writings and their language; hence arises a corresponding confusion of ideas.

For example, it is the custom to say almost indiscriminately—

A calcareous marine or tertiary rock.

A granitic, fresh water, or secondary formation.

An argillaceous, volcanic, or primary locality.

Although there are here introduced three orders of ideas, the first having reference to a specific quality—the second to a mode of formation—the third to the circumstance of age—M. Constant Prevost proposes to employ the words *rock*, *formation*, *locality*, in one unvarying sense.

To become acquainted with the nature of a soil it is necessary to learn

1. What is its composition—Whether a calcareous, argillaceous, or granitic rock?

2. What is its origin—Whether an igneous or aqueous formation; if aqueous, whether fresh water or marine?

3. What is its age—Whether a primary, secondary, or tertiary tract or locality.

According to these principles, formations divide the soil in vertical sections *tracts*; or *localities* in horizontal sections. The former admit of comparison to meridians of the sphere, the latter to the equatorial and tropical lines. Formations are synchronous or contemporaneous; *tracts*, on the contrary, are always successive.

M. Constant Prevost has applied these principles to the study of the ground of the environs of Paris and London; also to some other well-explored parts of Europe.

PLAN OF CONTRACTING THE FIBRES OF CALICO, AND OF OBTAINING ON THE CALICO THUS PREPARED COLOURS OF MUCH BRIL- LIANCY.

By Mr. MERCER.

In the list of subjects under the head of Section B., or Chemistry—in the arrangement of the British Association held at Ipswich in the commencement of the present month—the above title is to be found.

By some casualty Mr. Mercer himself was not able to appear;—by a further casualty the written description of the process which was to have been read by Dr. Lyon Playfair miscarried. However, the latter gentleman, having had the advantage of frequent communion with Mr. Mercer relative to the subject in question, was so perfectly au fait at all its details that the association lost nothing by the two contretemps.

Dr. Playfair delivered to the Chemical Section an extemporaneous address on the line of chemical speculation which led to this curious manufacture, as well as the details of the manufacture itself, both of which we proceed to communicate to our readers as involving, from whatever point of view regarded, materials of the deepest interest.

Often have we been struck with the force of a remark made by that great master of accurate observation, Faraday, in his invaluable "Manipulation," that, although a loose method of observation and experiment might suffice for the mere following out of direct connections of cause and effect, yet the experimentalist who abandoned himself to slovenly habits of procedure would seldom recognise those diverging lines of evidence which not unfrequently lead to collateral results more important than the direct ones originally proposed.

The correctness of this proposition is well illustrated by the case before us.

Mr. Mercer began his investigations by a scrutiny of the molecular condition of water at certain temperatures, and ended by the corrugation of cotton fibre.

The field of chemical investigation over which he passed is so interesting, so beautiful, so practically illustrative of the propinquity of the practical to the seemingly abstract branches of human knowledge, that we, with our readers, will travel over the same field again.

The property of water to acquire its maximum density at a temperature of about 39° F., and to expand when cooled from that temperature down to the freezing point, is familiar to every chemically-educated individual. This condition of water raises the notion of a peculiar molecular arrangement of particles, a notion which seems to be borne out by certain experiments of Dr. Leeson, in the course of which he found that water within this range of maximum condensation exercises a peculiar effect on polarized light. This phenomenon is one tending to the same direction with certain others, and indicative of the circumstance that water from its freezing point, or 32° F., up to its point of maximum density, or 39°, is most properly regarded as an aqueous solution of ice. Proceeding from this basis, then, Mr. Mercer was led to try

by experiment whether other aqueous solutions besides that of ice might not be endowed with properties of a parallel kind.

The result of his experiments on this subject went to show that mere chemical composition gives us an indication very wide of the truth of the real properties of many chemical bodies; that the molecular influences of temperature were powerful and manifold;—not merely discoverable by the aid of refined chemical investigation, but manifested in operations of so tangible a kind that might be made the basis of manufacturing improvements.

Thus, the ordinary method of bleaching brown cotton cloths consists in boiling them with a soda-alkaline solution. This operation has been followed from time immemorial without developing any of the peculiar effects of which we shall presently have to describe as resulting from the exposure of cotton fibre to cold soda-alkaline solution. Thus the presence or absence of a most curious and important chemical effect is determined solely by the molecular constitution of the soda solution at a certain temperature.

Amongst the first experiments performed by Mr. Mercer in reference to this subject was this:—He caused a cold aqueous solution of soda to percolate through many layers of cotton; and, having collected the percolated fluid, he discovered that it was weaker, more aqueous, than when it was first poured in. The first idea of the experimenter was that hygrometric water had been given out by the cotton, and thus the weakness or dilution had been occasioned. Further experiments, however, led to the abandonment of this view, and ultimately it was determined that an actual union took place between the cotton fibre and a portion of the alkali.

Proceeding with the investigation, the experimenter found that on subjecting the alkaline cotton to the heat of boiling water the alkali was discharged; but then, curiously enough, for every atom of alkali discharged an atom of water took its place, in virtue of the agency of chemical substitution; a law so ably developed by M. Dumas.

This hydrated cotton has now acquired certain peculiar and exceedingly valuable qualities. In the first place, its fibres are so thickened and corrugated that cotton textures of loose or common quality when thus treated acquire the density or number of picks to the square inch of a better texture; and a texture originally good is rendered denser or more thickly picked than it could have been made by mere mechanical means. Secondly, the texture so prepared is found to receive colours much more readily, and to acquire from similar pigments a brilliancy much greater than is the case with cottons that have been unprepared.

These are the two direct advantages flowing out of the discovery: indirect advantages there are innumerable, as the ingenious calico-manufacturer will easily recognise. Thus the new process may be made to develop patterns by a very easy modification; for instance, if portions of calico be protected by a varnish of gum from the alkaline agency, the contraile result will be limited to the unprotected parts, and by this means patterns of any amount of complexity may be developed. Again, by exposing mixed fabrics, containing cotton and wool, to this agency, the cotton alone suffering corrugation, it is evident that there would result an effect only requiring the application of a little intelligence to develop into marketable value. In fact, it is difficult to see the end of this beautiful application of a chemical fact. We had forgotten to mention that Mr. Mercer, during his experiments on water, at various temperatures, very ingeniously demonstrated the increased cohesion of water between 32 and 39, as compared with water at higher temperatures, by the following method:—Providing himself with two syphons of precisely equal dimensions and power, and applying them to two masses of water under the different thermic conditions, he found that the hotter water flowed most rapidly away.

Such was the subject of Dr. Lyon Playfair's extempore communication to the British Association on Mr. Mercer's process. The Prince, who was present, evidently took great interest in the communication, and with all the manner of a professed chemist he asked whether the colours employed in printing the calico were of a mineral kind. During an inter-

esting discussion which followed, M. Dumas, who was present, suggested that the microscope should be employed for the purpose of investigating the change which this corrugated cotton had undergone.

Much, we are convinced, will be developed from this line of inquiry. Dr. Playfair throughout his admirable exposition of Mercer's process spoke of the cotton merely as so much lignine. Future experiments we have no doubt will show that molecular constitution will again in this case have to be invoked, and will show that the tubular or capillary structure of the cotton fibre plays an important part in this singular rôle of physical and chemical changes.

ON THE PRODUCTS OF THE ACTION OF HEAT ON ANIMAL SUBSTANCES.

By THOMAS ANDERSON, M.D., F.R.S.E.

The author's discovery of picoline, a base isomeric with aniline in coal tar, and its similarity to the so-called odorine of Unverdorben, had led him to an extended investigation of bone oil, part of which, containing the discovery in that oil of picoline, and a new base called petinine, had already been published. The prosecution of these researches had enabled him to determine the presence in that substance of at least three different series of bases. The first of these is that which are commonly known as Wurtz's series, and of these he had established the existence of methylamine, ethylamine, propylamine, butylamine (petinine), valeramine, and probably also caprylamine. The second is a series of which the picoline already mentioned is the type, and of which two other members, pyridine, $C_{10}H_5N$, and lutidine, $C_{14}H_5N$ (isomeric with toluidine), are described. The third series is a very remarkable one, and is characterized by the property common to all its members, of being decomposed when heated with excess of acid into a basis of the picoline series, and a large quantity of a remarkable orange-red resinous substance. There, however, the author had not yet fully investigated. He had also ascertained that the non-basic oil contained benzole and the nitriles of some of the fatty acids.

ON A DIAMOND SLAB SUPPOSED TO HAVE BEEN CUT FROM THE KOH-I-NOOR.

By Dr. BEKE.

In the year 1832 the Persian army, under his Royal Highness Abbas Meerza, Hereditary Prince of Persia, undertook the subjugation of Khorassan, which province, though nominally forming a portion of the Persian empire, had been virtually independent since the death of the great Nadir Shah, in the year 1747. The success of the expedition was complete. The important fortresses of Ameerabad and Coochan were besieged and taken, and the other strongholds of the Toorkomans were destroyed, and the Persian sway was entirely re-established. At the capture of Coochan there was found among the jewels of the harem of Reesa Kooli Khan, the chief of that place, a large diamond slab, supposed to have been cut from one side of the Koh-i-noor, the great Indian diamond now in the possession of her Majesty. It weighed about 130 carats, and showed the marks of cutting on the flat and largest side, which appeared to correspond in size with the Koh-i-noor. The only particulars that could be obtained respecting the first history of the stone were that it had been taken from a poor man, a native of Khorassan, in whose family it had served for the purpose of striking a light against a steel, in the place of a flint, and one side of it was, in fact, a great deal used by constant use. This diamond was presented by Abbas Meerza to his father, Futteh Ali Shah, and is presumed to be now among the crown jewels of Persia. The Armenian jewellers and lapidaries of Teheran asked the sum of 20,000 tomanas (£16,000 sterling) for cutting it; but the Shah was not inclined to give so large a sum. The foregoing particulars were furnished to Dr. Beke by his brother, William George Beke, colonel of engineers in the Persian service, who took part in the Khorassan campaign.

PARIS ACADEMY OF SCIENCES.—MONDAY, July 7.

PHOTOGRAPHY.

M. Becquerel presented a communication from M. A. Poitevin detailing the process employed by him for obtaining on paper positive proofs of daguerreotype impressions, after having first obtained negative proofs on gelatine plates.

Since the sitting of May 27, 1850, when M. Poitevin submitted his first photographic proofs on gelatine to the notice of the academy, he has applied himself to modify his process so as to hasten the preparation of the gelatine plate, and to obtain a more sure result. The process which he now makes known offers a means of preparing the plates in a very short time, which may also either be used immediately, or be kept for an hour or an hour and a half before being operated upon.

In his communication M. Poitevin first speaks of the care required in the choice of the gelatine employed, of its preparation, and of its application in a thin coating to the surface of the glass plates. All the transparent gelatines met with in commerce are not equally good for photographic purposes; some of them contain traces of iron (chloride of iron most probably); these must be rejected, for they are coloured black by the gallic acid employed in the process; other sorts do not readily gelatinify when dissolved, and run on the surface of the plates; neither of these gelatines should be used. M. Poitevin thus proceeds to point out the proportions of gelatine, iodide of potassium, and nitrate of silver employed by him from December to April last, at which period he performed all his operations at a temperature of about 12° to 16° C. (53°·6 to 59° F.).

We hope to be able to give further details of M. Poitevin's communication in our next number.

SULPHITES OF COPPER.

M. Rogowski sent a communication on the sulphites of copper, with the view of showing the true composition of certain of these salts, of which no chemist had as yet given any exact analysis. The differences in the analysis furnished by different authors are stated by M. Rogowski to have arisen from the circumstance of their always taking for identical salts two red compounds, the composition and reactions of which are entirely different. When sulphurous acid gas is passed through water holding oxide of copper, Co O , in suspension, we do not obtain sulphite of copper, as stated by M. Chevreul, but a sulphite perfectly defined and crystallized, and the composition of which is—



M. Chevreul read a second communication from M. Henri Löwel on the supersaturation of saline solutions. In a note appended to his former communication, M. Löwel gave an account of an experiment which appeared to him to prove that the crystals deposited by supersaturated solutions of sulphate of soda kept in close vessels contained seven equivalents of water, and not eight, as he at first thought, as well as Mr. Faraday and M. Ziz. Since that he has made several other experiments which appear fully to confirm the opinion announced by him in his former communication.

PRESENCE OF AMMONIA IN THE AIR OF THE ATMOSPHERE.

M. Lassaigne addressed a communication relative to the presence of ammonia in atmospheric air collected in the middle of a garden. The experiment which formed the object of this communication was performed on air collected in the botanical garden attached to the school at Alfort, at a yard and a half above the soil, and same distance from any habitation. M. Lassaigne confirms the results obtained by other experimenters who have lately addressed the academy on this subject, that ammonia is present in the atmosphere.

MONDAY, JULY 14.—M. Regnault read a communication, in the name of M. Mène, detailing the results of comparative analyses of the air collected at the base and at the summit of the Pantheon on the 8th, 10th, and 11th of the present month. The quantity of air on which M. Mène experimented was on one occasion 125 litres, on the second 115 litres, and on the third 160 litres. In each case he found that carbonic acid was present in larger quantities in the air collected at the base than at the summit of the Pantheon. The following are some of the particulars of the results obtained:—

July 8, from noon to three o'clock p.m., 100 litres of air collected at the northern peristyle gave 0·622 grain in volume, 0·124 gr. in weight; 100 litres of air collected near the lantern gave carbonic acid per litre 0·0038 gr. in volume, 0·00076 gr. in weight; difference, 0·0021 gr. more of carbonic acid at the base than at the summit of the building.

July 10, from seven to half-past nine a.m., 100 litres of air collected at the western peristyle gave carbonic acid per litre 0·00075 gr. in volume, and 0·00015 gr. in weight.

July 11, from three to half-past four p.m., 100 litres of air collected at the western peristyle gave of carbonic acid per litre 0·0021 gr. in volume, 0·00042 gr. in weight; 100 litres of air collected at the lantern gave of carbonic acid per litre 0·0045 gr. in volume, 0·00028 gr. in weight; difference, 0·0019 gr. more of carbonic acid at the base than at the summit of the building.

M. Regnault remarked that these observations to be complete must also be made in the country, at a distance from masses of the population. It is possible that in such a case inverse results would be obtained, the action of the vegetable kingdom producing a contrary effect to that occasioned by the respiration of a populous neighbourhood.

M. Babinet presented a communication from M. Emanuel Liars, of Cherbourg, on the relation which exists between the temperature and the development of plants.

M. Edouard Robin presented a communication on the real part which oxygen plays in the respiration of vegetables. He endeavours to show that the respiration of vegetables, like that of animals, is a slow combustion, effected by humid oxygen.

M. Clerget presented a communication containing some further observations on testing the value of sugar by polarization. M. Clerget's principal object in this communication is to establish the fact that, although there does exist in the juice of the beetroot other principles than the saccharine, which act on polarized light, and which, therefore, in the view of some persons, render the polarizing process inapplicable to the quantitative estimation of sugar, it is possible, notwithstanding, to determine the quantity of real sugar present in a given sample of beetroot juice, by means of polarization, provided that certain modifications be attended in the mode of inversion. These will be noticed in our next number.

PROCESS FOR DETERMINING THE QUANTITY OF HYDROCYANIC PRESENT IN MEDICINAL PRUSSIC ACID, BITTER ALMOND WATER, AND LAUREL WATER.

By JUSTUS LIEBIG.

If a liquid containing hydrocyanic acid be mixed with caustic potash until evidence of a strong alkaline reaction is afforded, and a dilute solution of nitrate of silver be now slowly added to it, a precipitate will be formed, which, up to a certain point, immediately disappears again on ignition. If the hydrocyanic acid be mixed with caustic potash and a few drops of solution of common salt, it will be found that the first portions of silver solution added to the mixture do not produce a permanent precipitate; in this case the precipitate is white, and is, in fact, chloride of silver.

The hydrocyanic acid liquid mixed with caustic potash contains cyanide of potassium, in which oxide or chloride of silver is soluble, up to the point at which the known double salt composed of single equivalents of cyanide of potassium and cyanide of silver is formed, that compound not being decomposed by excess of alkali. If, then, we know the precise quantity of silver contained in a solution of the nitrate, and likewise the quantity by weight or volume which must be added to a liquid containing alkali and hydrocyanic acid to produce a permanent precipitate, we can readily determine the proportion of cyanogen or hydrocyanic acid present in the liquid under examination, since one equivalent of silver corresponds exactly to two equivalents of hydrocyanic acid.

The following method of performing this experiment may be easily followed:—Dissolve 63 grains of fused nitrate of silver in 5937 grains of distilled water; we thus get a test

liquor of 8000 grains, 300 grains of which correspond to one grain of hydrocyanic acid. The weight of the bottle containing this silver solution is then accurately taken and noted.

A weighed portion of the medicinal hydrocyanic acid to be tested, diluted with three or four times its bulk of water, is then to be mixed with a solution of caustic potash and a few drops of common salt, and to this mixture the silver solution is to be gradually added until a visible turbidity is produced, which does not disappear on agitation. The silver solution is then again weighed, and the quantity used will be shown by the loss in weight. Thus, suppose 60 grains of medicinal acid require 360 grains of silver solution, the proportion of anhydrous hydrocyanic acid present in the medicinal acid will be 1.20 grains in two per cent. In testing by this method an error of a grain or two in the quantity of silver solution used is not likely to occur, but even this would not make a difference of more than 1-100th or 1-50th of a grain in the amount of hydrocyanic acid.

The proportion of hydrocyanic acid present in any given sample of bitter almond water and laurel water may be estimated in the same way. The latter is usually clear and transparent; but the bitter almond water is often rendered milky by the presence of small drops of oil; this milkiness, however, is removed by the addition of three or four times its bulk of water, and the water thus rendered clear, a condition necessary for the correct application of the test. Some experiments made in this way showed that laurel water contains about one part in 10,000 of anhydrous hydrocyanic acid, and bitter almond water $7\frac{1}{2}$ parts in 10,000; but as these preparations, as met with in commerce, are very variable in their composition, a ready method of testing them is of great value.

The commercial cyanide of potassium may also be tested, and its value ascertained, by the same process. By its means it has been found that samples of this salt, prepared on Liebig's plan, were not so rich in pure cyanide of potassium as had been supposed, the proportions found being 63.6 and 59.99 per cent. The extensive employment of this salt in electro-metallurgy at the present day renders this means of testing valuable.

QUICKSILVER.—ITS DIMINISHED IMPORTATION —NEW ALMADEN IN CALIFORNIA VERSUS OLD ALMADEN IN SPAIN.

The importation of this metal, which amounted to 2,682,592 lb. in 1849, fell off to 355,079 lb. in 1850; and, judging from the quantity imported in the first five months of the present year (only 14,736 lb. against 169,347 lb. in 1850), a further diminution is likely to be the case. Whatever may be the cause of this diminished importation there is no danger of a deficiency in the supply of this metal for the future, as will appear from a recent account of the newly-discovered mine of New Almaden, situated between Francisco and Monterey, in Upper California. From a communication presented to the Chemical Society by Mr. Bealey it appears that the produce of quicksilver from the cinnabar obtained from this mine in the month of November, 1850, was not less than 127,500 lb., which would give an annual produce of 1,530,000 lb. This mine is the property of a company of English and foreign merchants, and is leased to a company of the same kind. It has been in active operation for eight or ten months. The vein is very large, and "crops out" on the surface, when it is worked. The metal is extracted from the ore in two ways:—First, by a series of large iron cylinder retorts, heated in furnaces, and discharging their produce into water, when the metal is condensed. Secondly, by brick furnaces, in which the fuel (wood) is intermixed with the ore. By these operations the ore gives from 30 to 45 per cent. of its weight of mercury.

Some opinions of cinnabar ore from New Almaden, sent to Dr. Hofmann for analysis, weighed as much as 14 lb. *avoirdupois*, were of a bright red colour, slightly inclining to purple, and traversed at irregular intervals of very thin

bands of white, hard crystalline material. In the state of fine powder it has a very brilliant vermilion colour, many shades darker than the massive ore. Its sp. gr. is 4.410. The natives have known of this mine from time immemorial, the ore being employed by them for painting their bodies.

The mean analysis of three specimens of this cinnabar gave 69.90 of mercury, 11.29 sulphur in 100 parts.

As the appearance of an ore of cinnabar so rich in mercury, and found in such profuse abundance, seems likely to have a material influence upon the permanent supply ordinarily found in commerce, a comparison was instituted between this and the ore derived from Almaden in Spain, well known as the source of Spanish mercury. The specimen of ore examined was obtained from Mr. Tennant, and described as one from which a considerable part of Spanish mercury was derived. It is like the Californian ore, massive, but much less brilliant and much harder. Throughout its mass small patches of yellow iron pyrites are irregularly distributed. When in the state of fine powder it has a dull brick-red colour, in striking contrast with the brilliant vermilion cinnabar from California. Its sp. gr. is 3.622; the mean of two analyses gave 37.79 of mercury, and 16.22 of sulphur.

Specimens of cinnabar from Moschellandsberg gave 66.60 of mercury, and 11.43 of sulphur, and from Wolfstein 18.00 of mercury and 73.31 of iron.

From these numbers it is evident that, provided the specimens represent the average minerals worked, the ore of California contains nearly double the amount of mercury found in the Spanish ore, and nearly fourfold that of the specimens of Wolfstein, while it approaches the composition of pure cinnabar even more nearly than the mineral of Moschellandsberg.

The great consumption of quicksilver is in the silver-producing districts of South America; upwards of 700,000 lb. having been exported from this country of South America in 1849. The discovery of quicksilver in California will be of great advantage in the mining operations of Peru, Chili, Mexico, &c. Mr. Barrow, who, in conjunction with Messrs. Forbes and Co., own the quicksilver mine in California, has stated that they would be able to deliver that metal at about 2s. 7d. per lb. instead of 3s. 9d. per lb., the present price. Large quantities of silver ore which have been hitherto considered too poor to bear the heavy cost of the quicksilver acquired for their reduction may thus be worked to advantage.—*Chemical Society.*

Chemical Record

AND

DRUG PRICE CURRENT.

SATURDAY, JULY 19, 1851.

HOMCEOPATHY TESTED BY CHEMISTRY, AND FOUND WANTING.

THE career of every successful imposition demonstrates the remarkable fact, that a stupendous amount of deceit finds ready credence, whilst a slight deviation from the line of truth would be indignantly repelled.

The pride of reason is strong in every one:—we are prone to bring within its cognizance all, and more than all, the subjects fitted for its grasp. Thus there is no hope for the long life of a little lie; we hand it over to reason—its feebleness is transparent; we discover it easily and discard it at once.

But when a stupendous incomprehensibility is ushered before the public—unblushingly advocated, strenuously maintained—the public has only one of two things to do: the first is to discard it, the second to receive it on faith;

and the records of all great delusions sufficiently prove the latter to be the more probable result of the two.

These remarks are suggested by the delusions of homœopathy—a deceit which, had it been less unblushing, less audacious, and not so utterly void of the semblance of truth, would have been repelled by the common-sense reasoning of the laity; whereas, being totally incomprehensible to them, it has been accepted as truth.

Our remarks are solely applied to the non-medical public; individuals to whom, speaking generally, the means of reasoning concerning the truth or falsehood of homœopathy are limited to mere speculations on the abstruse physiological functions, and to mystic cogitations of a metaphysical cast. By them the startling propositions of homœopathic error are so completely beyond the sphere of comprehension that they must be altogether rejected, or accepted on faith.

We purpose to deal with homœopathy chemically—to accept some of its own propositions and test them—little doubting but that we shall arrive at the issue of the alternative, that—if the homœopathic propositions brought under discussion be true—then is the science of chemistry false!

The following general propositions will be accepted as deriving undoubted origin from Hahnemann, and as being still professed by the disciples of that obscure mystic:—

1. That medicines to act homœopathically must not be admixed.

2. That the power of a medicine may be vastly developed by trituration.

These general propositions being admitted, our line of chemical argument renders it necessary that we should introduce the third and specific proposition:—

3. That silica, even in doses so small that it cannot be weighed, is a homœopathic medicament.

Taking these propositions as a basis, we will now deal with them according to the evidence of chemistry; and will see to what the investigation leads.

It is a fact perfectly well known to analytical chemists that, during the prolonged trituration rendered necessary in certain cases of chemical investigation, the mortar in which such trituration takes place is abraded. We speak not here of Wedgwood and marble mortars, for the abrasion in these is so obvious, so excessive, that we cannot with any degree of probability assume the homœopath to be uninformed of the fact, or careless as to the consequences. We speak of agate mortars; the hardest known to chemists, those in which all such triturations as those adverted to by us take place; and from which, particles by abrasion are so invariably removed that the operation of estimating their amount by weighing is a necessity imposed upon the chemist who undertakes any very delicate analysis of this kind. Now—clearly this same abrasion must occur to those who develop by their assiduous trituration the lurking virtues of homœopathic materia medica. Hence, not one solitary globule of the Hahnemann physic-store can exist without a notable admixture of silica; and such admixture, according to a received canon of the obscure old man of Meissen, is fatal to the exercise of the homœopathic medical power!

SOCIAL INFLUENCE OF THE PRESENT AGE.

The spirit and tendencies of our National Exposition have afforded an ample theme for speculation of all kinds—a

fertile topic for comment of all grades—from the heights of adoration to the depths of abuse.

Its birth was ushered in by a host of gloomy prophets—its rapid growth was said to be only the precursor of a rapid fall. The rain was to pierce through it, the winds to blow it down. Some persons were to be crushed under the falling iron and glass, the remainder were to be decimated by unheard-of plagues. London was to be eaten up—starvation to ensue—red-capped visionaries were to wend their steps hitherward—and, pouncing like wolves upon those whom other ills had spared, were to shoot her Majesty, sack the Mint, plant the red flag on Buckingham Palace, and reign supreme! These gloomy prophets violated the first law of prophecy:—They fixed a time, and the time has gone by.

We could disclose fairer prophecies than these; and, pointing to influences now called by the Exhibition largely into play, could announce, [without risk of failure, whither they must tend. It will be more satisfactory, however, to regard the present than the future—to indicate results that are, rather than such as will be.

The most casual observer of passing events cannot fail, we should think, to have noticed the social change already in operation; due in great measure to the existence of the Exhibition, and exhibited in a graceful amalgamation of different social ranks.

However much it may have been the fashion to speak of poets, of philosophers, of all whose excellence is of the mind—not the blood; spiritual—not corporeal; self-nurtured—not hereditary; however much it may have been the fashion to speak of these as above the factitious rank of society and heralds' marshallings, their recognition as equals has never yet been practically carried out.

It would be more curious than profitable to investigate the causes which have perpetuated this state of things; which have made England stand conspicuous for this isolation:—conspicuous even by contrast with despotic nations altogether deprived of the freedom which we so fully enjoy. It is sufficient to indicate that the chilling isolation has until recently continued to exist.

The signs of present times deceive us much if we have not already entered upon a better order of things. A thousand little indications of passing events, each trivial in itself, but important in the mass, tend to one and the same conclusion, and indicate a harmonizing and graceful intercourse of rank with rank.

One indication may be seen by inspecting the lists of fashionable réunions of the London season. The most casual inquirer cannot be insensible to the greatly increased infusion into those, of men whose minds are their highest blazonment, whose achievements are indeed their own. Another indication, and one still more marked, may be gathered from the visit which the Prince has been pleased to make to the sections of the British Association,—a visit, we may add, in which the inhabitants of Ipswich acquitted themselves with a temperate politeness highly creditable to themselves, and highly pleasing to the distinguished lover of science, who was for the time their guest.

It was the misfortune of our turbulent loyalty to manifest itself in olden time by boisterousness so rude, and manifestations so violent, that the public appearance of a magnate amongst the crowd must have been a matter of oppression and pain. Not least amongst the ameliorative social revolutions

effected by the Great Exhibition is this—that the people have learned to confine their loyalty within the bounds of politeness, to remember the courtesy due to the lady, whilst they vie with each other in pardonable emulation to view the Queen.

This amelioration has, we repeat, been accomplished, and it is a great deal. Under a less exaggerated form perhaps, but in essence the same, the rudeness of which we have spoken has too largely existed in other classes, and until ameliorated,—the graceful intercourse so desirable, and now commencing, could never have taken place.

The reception of his Royal Highness at Ipswich, both by populace and philosophers, was just the beau-ideal of what such a reception should be. May the Prince's visits be every year, and many a year; this is our desire.

CUSTOM-HOUSE IMPEDIMENTS.

THE traveller just arrived at a British port, and smarting under the petty annoyance of that tactile interference with personal baggage which, though fiscally necessary in all civilized countries, is, on some frontiers we could mention, idealized into a very inoffensive form, is apt to think that in these days the bearers of carpet bags and portmanteaus are alone the sufferers from the conscientious stringency of her Majesty's officers of excise.

That the great and manifold treasures of British commerce are exposed to vexatious interferences of a parallel kind it is difficult for one of the uninitiated to comprehend. The realization of such an idea, it would seem, must sap the very foundations of commercial enterprise, promote discontent, stimulate to contraband trade, and, in the end, destroy that high tone of commercial honour which is the pride and glory of the English merchant to enjoy.

However seemingly improbable the fulfilment of this idea may be, its realization, nay, its more than realization, is but too true—as must have been rendered evident to such of our readers as have watched the tedious process of litigation between the merchant of London and the London Docks.

The evidence elicited by this legal investigation, as well as that given before a committee of the House, has been of a most extraordinary kind. The mechanism of the Customs has been proved to be so unwieldy in its progression,—so unjust,—so iniquitous in its application, as to be immediately suggestive of the Inquisition, an institution to which in every respect, save its non-ecclesiastical character, it may be said to bear the strongest possible analogy. From the highest to the lowest of its officers the major interest is accusation: the accusation is made on *ex parte* statements, and, to the accused, unrevealed; the accuser and the accused are never confronted; tortures are inflicted that would gladden the soul of a Domenic or a Torquemada; so that, innocent or guilty, the result is the same—not broken bones, or strained muscles, it is true; but what, perhaps, is not much better, shallow finances, broken fortune, and often a broken heart! The merchants have appointed their own city committee for thoroughly investigating and making known the iniquities of customs administration. These gentlemen have published *Whitefish* of valuable papers, in which we find aggregated the various points of floating evidence on this all-important matter. This evidence it is impossible to peruse without arriving at the conviction that, whether we have reference to

the authority of the past, or whether to the peculiar connection of influences to which the Board of Customs must, under its present constitution, be amenable—there exists, practically, no means of redress against the one-sided edicts, the mistakes, the oppressions of this branch of the fiscal government.

The stereotyped reply of the Lords of the Treasury to all petitions is common even to ridicule; and a legal contest in the Exchequer is a means of redress of which very few will incur the risk; seeing that the extent of fullest success can only end in the plaintiff paying his own costs.

It is for jurists to unravel the justice of that fundamental canon of British law by which the Crown neither pays nor receives costs. The discussion of such a time-honoured principle of our legal code is, perhaps, as far beyond the right of laymen to enter upon as its peculiar justice is beyond the scope of their vision to see. It will be conceded, however, that such a legal element may at any time become, when moved by a Government against an individual, the very reverse of what a legal element should be—not an instrument of justice, but of oppression; not a means of eliciting truth by dispassionate evidence—but of hurking all evidence, and of imposing silence on a sufferer through the terrorism of fear.

If the administration of the Customs be galling and oppressive when exercised in its legitimate sphere of duty-paying goods, how greatly must these annoyances be increased when they touch commodities on which no duty whatever is leviable; and yet it will be seen from a statement which we append, that the technical impediments to the current of trade in these even—amount to a most ridiculous length. Surely, so long as a portion of our revenue is to be levied from the Customs, every means should be taken to alleviate the pressure, the irritation, and often worse, of a branch of the public service, which, at the best, must be somewhat unpleasant to those who come under its scrutiny. At any rate, in these days of quick movements, no one will be wild enough to say the forms of customs procedure which we append are called for by any supposed necessities of fiscal security.

The following are the forms required as a forward entry for free goods:—

“1st, there is a clerk who numbers the merchant's entry bill: 2nd, there is a clerk for sorting and reading those bills: 3rd, there is a clerk, a computer, who initials them: 4th, there is a clerk who reads them to a comptroller: 5th, the comptroller who signs the warrant, 6th, a messenger who carries them to the clerk of the warrants: 7th, the clerk of the warrants who enters them: 8th, a messenger to the docks or quays: 9th, the registrar who receives them: 10th, the registrar's clerk who enters them in a book for the landing waiter and keeps the warrant: 11th—and here we come to the only material portion of these forms—the landing waiter examines the goods accompanied by 12th, a weigher; and 13th, the supervision of the landing waiter who writes the goods out of charge: 14th, the landing-book is returned to the registrar, who forwards to 15th, jerquer, and if found correct by him it is put away as complete.”

The forms of entries in the case of duty-paying goods for home consumption are still more numerous. When the duty amounts to £5 and upwards they are as follow:—

“1st, a clerk receives the duty, enters the same, and signs the receipt: 2nd, a messenger with the receipt: 3rd, a clerk who receives the receipt: 4th, a clerk who numbers the warrant and bills: 5th, the clerk who sorts and reads: 6th,

comptroller's computer: 7th, collector's computer, who both initial: 8th, a clerk who passes the papers to the 9th, who is collector: and 10th, the comptroller, who both sign: 11th, messenger to the clerk of warrants: 12th, clerk of ditto who enters: 13th, messenger to docks or quays: 14th, registrar or warehouseman who receives and signs: 15th, clerk enters: 16th, clerk examines the landing particulars with the warrant, and makes out the locker's order: 17th, registrar or warehouse-keeper signs locker's order, and keeps the merchant's warrant: 18th, messenger to the locker: 19th, locker receives the warehouse-keeper's order and delivers the goods."

Even the forms for entry outwards of free goods amount to nine:—

"Cocket and bill presented to clerk, who signs and returns the former: 2nd, cocket, with a declared account, on a bill of the goods to be shipped, taken to the searcher at the station where the goods are to be shipped: after shipment it is taken by 3rd, a messenger, to the Custom-house: 4th, clerk who receives the same: 5th, clerk who takes the cocket: 6th, clerk who takes the bill: 7th, clerk who delivers cocket to shipowner or broker when clearing: 8th, office-searcher, who signs the label on ship's file: and 9th, collector of customs, who signs the label on the ship's file of cocket, takes the masters declaration, and the ship is cleared."

The forms for an export entry for goods subject to duty ad valorem amount to no less than twenty-one!

"1st, Locker certifies goods as imported; landing surveyor approves value of goods; 3rd, bond clerk receives particulars of bond; 4th, clerk writes the bond; 5th, clerk receives merchant's signature: 6th, clerk signs warrant for bond taken: 7th, clerk signs cockett: 8th, warehouse-keeper's clerk enters particular of bond: 9th, clerk examines the entry with landing account, and issues locker's order: 10th, warehouse-keeper signs cockett, bill, and locker's order: 11th, searcher initials locker's order for delivery: 12th, the locker delivers: 13th, searcher issues pricking note: 14th, searcher's man obtains receipt for goods when on board ship or craft: 15th, searcher makes shipped: 16th, messenger to Custom-house: 17th, receives cockett: 18th, takes bill: 19th, delivers cockett to broker when clearing: 20th, office searcher signs label on ship's file: 21st, collector of customs signs label on ship's file of cockets, takes the master's declaration, and the ship is cleared."

So cumbrous a piece of mechanism as this is repugnant to the fast-moving spirit of the age—is gratuitously oppressive, inefficient, and ridiculous. It must be swept away.

THE SALE OF ARSENIC BILL.

THE apathy so long displayed by the British Legislature with reference to the cases of arsenical poisoning has at length given place to a legislative enactment for the regulation of the sale of arsenical compounds, which, being short, we will present entire. The bill comprehends all the preparations of arsenic in any way likely to be used by the murderer, and will, therefore, we have no doubt, prove far more effectual as a preventive of secret poisoning than the more elaborate ordonnance of our neighbours the French—who included every known poison in their list—and thus defeated the object they had in view by the refined mechanism of their provision:—

"AN ACT TO REGULATE THE SALE OF ARSENIC.
JUNE 6, 1851.

"Whereas the unrestricted sale of arsenic facilitates the commission of crime: be it enacted by the Queen's most excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:—

"I. Every person who shall sell any arsenic shall forth-

with, and before the delivery of such arsenic to the purchaser, enter or cause to be entered in a fair and regular manner, in a book or books to be kept by such person for that purpose, in the form set forth in the schedule to this act, or to the like effect, a statement of such sale, with the quantity of arsenic so sold, and the purpose for which such arsenic is required or stated to be required, and the day of the month and year of the sale, and the name, place of abode, and condition or occupation of the purchaser, into all which circumstances the person selling such arsenic is hereby required and authorized to inquire of the purchaser before the delivery to such purchaser of the arsenic sold, and such entries shall in every case be signed by the person making the same, and shall also be signed by the purchaser, unless such purchaser profess to be unable to write (in which case the person making the entries hereby required shall add to the particulars to be entered in relation to such sale the words 'cannot write'), and, where a witness is hereby required to the sale, shall also be signed by such witness, together with his place of abode.

"II. No person shall sell arsenic to any person who is unknown to the person selling such arsenic, unless the sale be made in the presence of a witness who is known to the person selling the arsenic, and to whom the purchaser is known, and who signs his name, together with his place of abode, to such entries, before the delivery of the arsenic to the purchaser, and no person shall sell arsenic to any person other than a person of full age.

"III. No person shall sell any arsenic unless the same be before the sale thereof mixed with soot or indigo in the proportion of one ounce of soot or half an ounce of indigo at the least to one pound of the arsenic, and so in proportion for any greater or less quantity: provided always, that where such arsenic is stated by the purchaser to be required, not for use in agriculture, but for some other purpose for which such admixture would, according to the representation of the purchaser, render it unfit, such arsenic may be sold without such admixture in a quantity of not less than ten pounds at any one time.

"IV. If any person shall sell any arsenic, save as authorized by this act, or on any sale of arsenic shall deliver the same without having made and signed the entries hereby required on such sale, or without having obtained such signature or signatures to such entries as required by this act, or if any person purchasing any arsenic shall give false information to the person selling the same in relation to the particulars which such last-mentioned person is hereby authorized to inquire into of such purchaser, or if any person shall sign his name as aforesaid as a witness to a sale of arsenic to a person unknown to the person so signing as witness, every person so offending shall for every such offence, upon a summary conviction for the same before two justices of the peace in England or Ireland, or before two justices of the peace or the sheriff in Scotland, be liable to a penalty not exceeding twenty pounds.

"V. Provided that this act shall not extend to the sale of arsenic when the same forms part of the ingredients of any medicine required to be made up or compounded according to the prescription of a legally qualified medical practitioner, or a member of the medical profession, or to the sale of arsenic by wholesale to retail dealers, upon orders in writing in the ordinary course of wholesale dealing.

"VI. In the construction of this act the word 'arsenic' shall include arsenious acid and the arsenites, arsenic acid and the arseniates, and all other colourless poisonous preparations of arsenic.

"THE SCHEDULE.

Day of Sale.	Name and Surname of Purchaser.	Purchaser's Place of Abode.		Condition or Occupation.	Quantity of Arsenic Sold.	Purpose for which required.
1, 8 th 1851.	John Thomas.	Hendon	Elm Farm.	Farm Labourer.	5 lbs.	To steep Wheat.

"(Purchaser's Signature), (Witness), (Seller's Signature),
John Thomas, James Stone, George Wood,
or, if purchaser cannot write, seller to put here the words, "cannot write."

REVIEW.

THE METROPOLITAN WATER SUPPLY.
METROPOLITAN WATER BILL.

Copies "of Report by Mr. Rammell, an Inspector of the Board of Health, and of all Reports or Information on the Soft Water Springs in the Surrey Sands; together with any Estimates, Surveys, or any Minutes and Correspondence with the General Board of Health thereon, or in relation to the combination of the new Sources with other Works."

On the Composition of certain Well-Waters in the Neighbourhood of London, with some Observations on their Action on Lead. By Henry M. Noad, Esq., Lecturer on Chemistry at St. George's Hospital. Quarterly Journal of the Chemical Society. Vol. IV.

Report and Papers of Suggestions on the Proposed Gathering Grounds for the Supply of the Metropolis from the Soft-Water Springs of the Surrey Sands; addressed to the General Board of Health. By the Hon. William Napier. Presented to both Houses of Parliament by command of her Majesty.

A Geological Inquiry respecting the Water-bearing Strata of the Country around London, with Reference especially to the Water Supply of the Metropolis. By Joseph Prestwick, jun., F.R.S. (Van Voorst, Paternoster-row.)

However great may be the amount of obscurity in which the nosology of the cholera is hid, the Registrar-General's returns have at least demonstrated this fact,—that with the exception of a few isolated instances, in no way affecting the rule, cholera, the greatest of all modern scourges, has ever been coexistent with squalor, filth, confined air, bad drainage, water insufficient and impure, and other vitiations of the springs of life which affect the condition of the poor.

Whatever the doctrine advocated—whether that the disease floated to our shores on the Eastern breeze—whether it came bodily absorbed in bales of merchandise, or was propagated by touch—whether it evaded the vigilance of quarantine, or derived a separate origin and existence in each devoted spot—whether, in short, it were infectious or contagious, endemic or epidemic; extraneous or sporadic;—this fact was evident to all:—that given the presence of cholera in a city, and a map of the same, the observer might point to the localities of greatest filth, poverty, squalor, and say;—there will the cholera first be manifested; there commit its greatest havoc; there will it maintain the longest stand.

The first indiscriminating force of the scourge being over, the first blind reliance on medical skill having given way—the people of the metropolis never slow to view facts, when presented through the medium of statistics, learned by reference to the Registrar-General's report, that, however much medical logicians might abandon themselves to polemics, and split their collegiate straws about the vexed question of the origin and the treatment of cholera—the prevention at least of the disease, which is better than cure, was really, for all practical purposes, in the people's own hands. To convert the poor into the rich, the houseless into the sheltered, the miserable into the happy, the weak into the strong, this would have been, indeed, a visionary scheme; scarcely less visionary was it to have counselled liberal allowance of soup and wine, and animal food, to creatures whose scanty earnings consigned them to the necessity of lowest diet, varied too frequently by no diet at all.

It is much, however, to recognise an indication—even though the indication cannot be fulfilled. To the honour of metropolitan humanity it may be said that the mere depressing effects of physical inanition were in great measure provided against by private philanthropic writers, and in this way one powerful agent in the development—if not in the generation of cholera, was removed. In no long time it was discovered, however, that two fatal conditions occurred; conditions as far beyond the sphere of extemporaneous philanthropy to remove, as their influence was beyond the resources of medical aid to control. Individual philanthropy might enjoin cleanliness, but could not extemporize sewers; might provide wine, but not an abundance of good water. These, it was discovered at the eleventh hour, were functions to have been discharged by a government; and to the Govern-

ment the indication of their discharge was consigned. Then sprang into existence the board at Gwydyr house; and, much as it has been ridiculed and maligned, all must concede to it the credit of applying itself to the amelioration of three specific sources of metropolitan pollution—namely intramural interment, insufficient and bad water, and imperfect sewage.

As to the first, we must commend them for the exercise of the little authority they had; there was a short period when their dicta were respected; city churchyards caused for a time to turn up their hideous débris. We hoped to have seen the disgrace abolished for ever within our city walls. How vain the hope need not be told; there were vested rights in corpses beyond the power of Gwydyr-house to touch: the clergy as a body, to their discredit be it spoken, never reprobated—nay, often advocated, the hideous anomaly. One by one, as if by stealth, mounds of reeking earth were seen to rise as of old; other corpses were deposited in the rotting quagmires of human flesh; other masses of upturned putridity gave out their emanations to the greedy air, and as though the prescriptive right of one element to the continuous poison supply were not enough, the vested interests of London well water to its savoury seasoning of human juices was provided for by the assiduous plying of the sexton's spade. The proximity of a pump to a churchyard, as we find in London, is suggestive of the idea that we like water which has acquired a certain savour, and is perhaps nothing more than humanization, refinement,—idealization, if we may so call it, of the depraved instinct which leads the dog to bury his flesh that it may acquire an insipient putridity to give to his repast a zest.

And so it happened as we have remarked, that the Board of Health were inefficient against this monster abuse,—and so it happens that, as of yore, the traders in the corpse line participate in the developments of this enlightened age. In this, as in every other branch of industrial occupation, there are imitations, new developments, rapid deflexions of capital, fluctuations. Thus, the resurrection-men have been long at a discount, corpses being supplied from other sources; teeth really artificial, sound, nut-cracking, brilliant bits of enamel, have sadly trenched upon the old source of demand. Hair, too, has been at a discount since the almost total extinction of perukes. But, on the other hand, lucifer-match making has grown to be a gigantic occupation, patent firewood the same. For these purposes coffin timber when not too far gone answers perfectly well: when rotten it grinds into very passable chicory. Human flesh makes good prussian blue, human bones make good animal charcoal, and good animal charcoal makes good refined sugar. Hence, then, we find that an important class of occupations to which we owe the periodical disembarassment of our metropolitan churchyards, a class not likely to linger or decline, removes from all reasonable minds the fear of extraordinary accumulation or repletion.

Thus, in endeavouring to carry out their first amelioration, the Board of Health have, although by no fault of theirs, signally failed, and the congregated strangers whom the Exhibition has drawn to our capital may still observe, in all its unenviable features, our cherished national peculiarity of disposing of the dead. As to sewage, it is now conceded on all hands, we believe, that the Thames should not be made the reservoir for all the filth of two millions and a half of inhabitants; and, though but little has been done as yet in the way of amelioration, there are long shadows of improved schemes hovering in the distance, shadows which we take to be heralds of coming events.

Of these ameliorative propositions the question of the water supply has assumed the most definite shape. Amidst all the profitable labours imposed on our legislative bodies by the Ecclesiastical Titles Bill, time and opportunity have been found to discuss the important subject of metropolitan water supply. A bill was brought in having for its object the better regulation of this supply—brought in only to be abandoned; pamphlets have been written for parliamentary uses; communications on the subject have been made to periodicals; parochial constitutions have been convened, and long and angry contentions have ensued. Before us lie certain brochures on this important subject. We propose to analyse their

contents, whilst, at the same time, we append our own views. Perhaps, indeed, our own views had better appear first.

We must begin by pointing to the very wide difference in a chemical sense between water that is pure, and water that is good. Of course, by *pure* we mean—pure according to chemical logic—and by good, we mean good not for the laboratory—but, for the general purposes of domestic life. It is necessary to be very precise on this point, because in the outcry which now exists against the principles and tendencies of the metropolitan bill there is a vague clamour for pure and soft water:—*pure* and *soft*, these are the qualities before which all others must give way. Now, there can be no difference of opinion on this point by all who are competent to judge concerning it, that water absolutely pure, however fit for washing, tea-making, brewing, and domestic operations in general, would be wholly unfit for human or animal ingestion. A fish cannot live in pure water, and we doubt whether a human being could live on it. Had pure water been desirable for the economy of nature, it would have doubtless been supplied to us in due proportion; but the fact of its absolute non-natural existence is sufficient to stamp as unreasonable—unphilosophical—the clamour for water such as nature has failed to give; such as is fatal to the most aquatic of all beings; such as the instinct of animals if offered it for experiment repels. We need not dwell longer upon the question of pure water: were the liquid in this condition it would be absolutely impossible to obtain in such quantities as should serve for civic use. We may then pass on to such varieties of natural waters as approach in their nature most nearly to the condition of absolute purity; and discuss their nature, properties, and effects.

A word or two, however, first. Let us advert to an experiment from which, if the reader do not *now* draw his own inferences, he will by and by.

If water absolutely pure—that is pure even from air of every kind—be brought into contact with polished lead, not the slightest action takes place, however long the contact be maintained. If, however, the pure water be allowed, instead of falling direct on the plate of lead, to trickle on it from the palm or back of the hand—then the momentary contact with the animal surface will be amply sufficient to give it not slight, but extreme solvent powers. The lead will be rapidly corroded, and the solution will speedily become a virulent poison. From this experiment we learn, that certain animal emanations exert a solvent power on lead.

If the same water be breathed upon, a similar result takes place; not so much we believe (as is the common opinion), that it has dissolved carbonic acid; but an animalized emanation of the lungs.

Now, it happens that the solvent power on lead possessed by water, under certain circumstances, is materially diminished, if not altogether prevented by the presence of phosphates, sulphates—certain carbonates, and a range of other bodies which spring water, and, indeed, most river waters, usually contain. Of this fact there is no doubt; but, during the polemical contention which the water-supply discussion has evolved, the fact has been too frequently overlooked that the presence of some body of specific solvent power may coexist with, and overcome, the protective agency of the preservative salts.

“Among the constituents of the well water of large towns, nitric acid has been often alluded to. Mere traces of it have, I believe, hitherto been found; at least I am not aware that a quantitative determination of it in any of the water in and about the metropolis has hitherto been published. That it does, however, occasionally exist in large quantities, is shown by the following analysis by Mr. W. Fisher, of a well water from Highgate, one of a series of water analyses that has for some time been in course of execution by the pupils of the laboratory of this academic school.”

“Attention was directed to this water, firstly, in consequence of its powerful action on the leaden cistern in which it was retained, and, secondly, on account of the unusual amount of saline matter which it contained. Its hardness has prevented its being much used for domestic purposes, which may probably be deemed a fortunate circumstance, as I have found the metal evidently acted upon after being

immersed in a bottle of the water for a few days only. By the subjoined analysis it will, I think, appear that the remarkable action of this water on lead is referable to the comparatively small quantities of sulphates and chlorides, and to the extraordinary amount of nitrates which it contains. The source of the latter is pretty clearly pointed out by the situation of the well, which is immediately contiguous to the old churchyard on the very top of Highgate-hill, the loose and sandy soil of which must be teeming with organic substances in all stages of decay, and which, therefore, are constantly furnishing ammonia, from the oxidation of which the nitric acid is in all probability derived. The putrefaction of animal matters, in contact with calcareous soils, is well known to produce nitrate of lime; and it was long ago shown by Glauber that a vault, plastered over with a mixture of lime, wood, ashes, and cow-dung, soon became covered with efflorescent nitre. In the water in question, the nitric acid exists in combination with lime and magnesia, which earths would naturally have occurred in the form of carbonates, held in solution by carbonic acid. Not a trace of carbonate now exists; neither does the water contain any appreciable quality of organic matter, which has been destroyed by the powerful oxidizing operations which are constantly going on in the contiguous soil. I have examined the water from six other wells, at various distances from the churchyard, but all coming within the range of the Bagshot sand formation: in each, nitric acid has been detected, though from the great trouble attending the quantitative estimation of this substance, a complete analysis has as yet been made only of the one first referred to.

“Now, though the presence of earthy nitrates does not perhaps communicate any injurious or unwholesome quality to a water—indeed from the entire absence of decomposing organic substances it may be less objectionable as a beverage than the average waters of large cities—it is nevertheless important to bear in mind the powerful action of such waters on lead, and the possibility of its becoming the vehicle through which this subtle poison may be introduced into the system. The public, indeed, cannot be too emphatically warned against the too common practice of allowing any water intended for domestic use to remain stored up in leaden vessels; for, as I shall have to show presently, the existence in the water of considerable quantities of both sulphates and chlorides is not always a security against saturnine impregnation.

“The nitric acid in the Highgate water was estimated by the following process:—

“An imperial gallon was concentrated by evaporation to about half a pint, which was macerated with excess of recently prepared sulphate of silver, and allowed to remain at rest for twenty-four hours. It was then filtered; rendered alkaline by carbonate of soda; again filtered; and the filtrate concentrated by evaporation and distilled in a large retort with chemically pure sulphuric acid, the distillate being collected in a receiver containing strong baryta-water. The distillation was continued till fumes of sulphuric acid began to appear; it was then stopped and the retort allowed to cool; a quantity of distilled water was then added; and the distillation resumed and continued as before till fumes of sulphuric acid began to rise. This operation was repeated thrice, preliminary experiments having shown that the last portions of nitric acid are only expelled from the sulphuric acid residue, by thus urging them forward in an atmosphere of steam. The contents of the receiver, containing nitrate of baryta and excess of baryta-water, were exposed to the air in a large dish for twenty-four hours—then filtered—and into the clear filtrate a slow stream of carbonic acid gas was passed, till the liquor was no longer alkaline to test paper; it was next evaporated to dryness, and the residue treated with successive portions of boiling water till the whole of the nitrate of baryta was dissolved out. The clear solution being precipitated with sulphuric acid gave the amount of sulphate of baryta corresponding to that of the nitrate, and from which the amount of nitric acid was calculated. From the first experiment, made on water taken from the well in June, 1850, 76.76 grs. BaO. SO₃ = 85.96 BaO. NO₃ = 35.53 grs. NO₃ were ob-

tained. From the second, made on water taken from the well in October, there were obtained from 28,000 grs. of the water, 38 grs. BaO , $\text{SO}_2 = 37$ grs. BaO . $\text{NO}_2 = 15.29$ grs. NO_2 . The latter experiment gives 38 grs. of nitric acid in an imperial gallon of the water, a quantity rather larger than that obtained in the former experiment, in which traces of nitric acid were found in the sulphuric acid residue, even after three additions of water. In the second experiment six additions of water were made, in quantities of about four ounces each time: the residue was now found entirely free from nitric acid.

"Saline contents in the Imperial pint:—

By direct estimation, 12.57 grains, consisting of	
Silica	0.1120 grs.
Sulphate of potash	2.1306 "
Sulphate of soda	1.1894 "
Chloride of sodium	1.2040 "
Chloride of calcium	0.7390 "
Nitrate of lime	5.0150 "
Nitrate of magnesia	2.1330 "

12.5230

"The next water to which I shall call the attention of the society is from a spring at Clapham which was submitted to me for analysis in the summer of 1848, in consequence of its strong action on lead. I collected the water myself on the spot, and on the same occasion was shown the cistern, which was then nearly full of water, the surface of which was covered with a thick greasy scum, which proved, on examination, to consist almost entirely of oxide of lead. I expected to find this water unusually pure; to my surprise, however, it contained nearly 78 grains of solid matter per imperial gallon, the composition of which was:—

Silica	0.24
Carbonate of lime	15.09
Carbonate of magnesia	18.97
Sulphate of lime	15.32
Sulphate of potassa	6.79
Sulphate of soda	10.77
Chloride of sodium	11.46
Organic matter	4.10

77.74

"Here, then, we have an instance of a water containing an abundance of so-called "preservative salts," corroding lead with remarkable energy."

"The oxide of lead could be skimmed from the surface of the water in abundance; but on testing the water beneath, taking care to avoid filtering, by which a very considerable quantity of the metal, even when in solution may be removed, no signs of lead could be detected. To what are we to ascribe this remarkable action? I believe to the presence in the water of an unusually large quantity of organic matter. It was during the summer months that the corrosion of the cistern took place so rapidly. The organic matters would then be undergoing the most active decomposition, and carbonic acid, being constantly evolved against the sides and bottom of the cistern, would enter into combination with the surface oxide, and so form carbonate of lead. This is by no means the only instance I have met with of water abounding in sulphates and chlorides acting strongly on lead, and, in every case that I have yet examined, organic matter has been present in unusual quantity. It is worthy of remark, that no lead could be found in solution; whenever this does occur, in any but pure or alkaline water, the metal is probably taken up in the form of oxichloride. Carbonate of lead is wholly insoluble, even in water highly charged with carbonic acid. I mention this because an idea is very generally prevalent that carbonate of lead, like the carbonates of lime and magnesia, may be rendered soluble by taking up an extra atom of carbonic acid. I have made direct experiments which negative this assumption, and it has since been pointed out to me that the same had been previously done by Dr. Taylor. But water, though it cannot take up carbonate

of lead in solution, may, by keeping it in mechanical suspension, be the means of introducing this dangerous form of saturnine poison into the system. The practice of filtering water preserved in leaden cisterns, and intended for domestic use, cannot, therefore, be too warmly recommended.

"I wish, lastly, to say a few words on another class of waters which act strongly on lead, viz., the artesian-well waters of the London basin. These waters are, I believe, always alkaline; those which I have examined are remarkably free from organic matter, and, as there is no deficiency of preservative salts, it is to their alkalinity that I am inclined to attribute the corrosive action which they exert on this metal. From several analyses of these waters, which have lately been made in this laboratory, I select two, one from the premises of the Lord Chief Baron at Hatton, which was examined by Mr. Henry Pollock, in consequence of the rapidity with which it corroded the leaden cistern; and the other from the Lunatic Asylum at Colney-hatch, which I analyzed at the request of Mr. Rotch, the chairman of the board of governors of that institution, with the view of ascertaining its general fitness for the purposes of the asylum, before fresh expenses were incurred for conveying it to different parts of the building. It is worthy of remark, that Mr. Pollock was able to detect lead in the clear water of the cistern which I had been unable to do in the case of the Clapham water.

"The analysis of these two artesian waters gave the following results per imperial gallon:—

	Hatton.	Colney-hatch.
Carbonate of lime	2.120	6.500
Carbonate of magnesia	.880	1.320
Carbonate of soda	15.196	7.100
Sulphate of potash	traces	2.590
Sulphate of soda	10.456	5.770
Sulphate of lime	"	4.585
Chloride of magnesium	"	4.260
Chloride of sodium	9.288	"
Protocarbonate of iron	.480	"
Soluble organic matter	"	.470
Phosphate of lime	traces	traces
Silica	.050	.670

38.470 33.235

Saline matter by direct estimation 38.6 32.97

"Of the excellence of both these waters for domestic use the analyses bear ample testimony; but, with the example of the Hatton water before me, I felt bound to warn the governors of the Colney-hatch Asylum against the use of lead, either for storing the water, or for distributing it. I found, however, on visiting the institution, that my warning was not required, that metal being almost entirely banished from every part of the building."

The facts contained in Mr. Noad's paper are of great practical importance. Leaving the subject of the action of soft or non-mineralized aerated water on lead undiscovered, he clearly shows that mere mineralization, by preventive salts, should not be regarded as an element of infallible safety, because there may be also present an agent, such as nitric or carbonic acid, or an alkali, by either of which solution of lead may take place.

It is most important to have demonstrated that carbonate of lead is not, like the carbonates of alkaline earths, soluble in excess of carbonic acid; such has been the notion hitherto, a notion which, if confirmed, would totally preclude any advantage from the mechanical operation of filtration as a safeguard against the presence of this form of lead. Although we have not confirmed by experiment the proposition of Mr. Noad, we have no doubt of its being correct. Long ago we were disposed to think some mistake must have been made by the previous experimenters who enunciated the canon of the solubility of carbonate from carbonic acid. Our doubts rested on this basis. The city of Amsterdam is supplied with water from two sources. All the inhabitants who can afford it obtain their supply of water for draught from Utrecht. The others, the poorer population, use nothing but rain water, that has been stored in tanks, and filtered. If ingested before filtration for any length of time lead colli-

* I was shown by the plumber a piece of the bottom of the cistern which in the course of six months had been eaten into holes.

is the universal result; if after filtration, it is perfectly innocuous. Stronger evidence in favour of Mr. Noad's proposition can scarcely be conceived.

The solvent power which waters containing organic matters exercise upon lead Mr. Noad attributes to the slow development of carbonic acid. We doubt whether the agency in question be not more due to the formation of acids of the arenic, apocrenic, and humic tribes—acids whose function, development, and agencies, are so little understood.

SPECIFICATIONS OF CHEMICAL PATENTS.

Under this head we shall give an abstract of the specification of every chemical patent enrolled from the present time. The specifications will be read for us by a gentleman well qualified for the duty, and who has had considerable experience in the matter. The only specification enrolled during the past week is the following:—

Henry Grissell, of the Regent's Canal Iron Works, in the county of Middlesex, engineer, and Theophilus Redwood, of Montague-street, in the same county, professor of chemistry, for improvements in coating metals with other metals. Date of the patent, January 11, 1851; date of enrolment, July 10, 1851. This specification contains five distinct processes for coating metals with other metals, which processes are claimed as their improvements by the patentees.

First Process: Coating Iron with Zinc.—To accomplish this, a bath or vessel of iron or other suitable material is employed, in which the zinc is melted by means of heat; on the surface of the melted zinc a thick stratum of chloride of zinc is there placed. When the metal and the chloride are in a state of fusion, the iron is dipped into the metal, through the covering of fused salt, and thus becomes coated with zinc. If, however, it is found in practice that a sufficient quantity of zinc has not adhered to the surface of the iron, a small quantity of powdered sal ammoniac is sprinkled on the iron, which is then again immersed in the melted zinc. Instead of chloride of zinc, a mixture composed of 8 parts of chloride of zinc and 10 parts of chloride of potassium may be used, in a mixture of equal parts of chloride of zinc and chloride of sodium, or a mixture of about equal parts of dry sulphate of zinc and chloride of sodium, or chloride of potassium.

The patentees claim the use of chloride of zinc applied as above mentioned in the fused state, also the use of the various mixtures enumerated.

Second Process: Coating Zinc, Zinc-ed Iron, or other Metal with a Metallic Alloy.—For this purpose a bath or vessel of iron or other suitable material is used to melt the alloy. On the surface of the melted alloy a stratum composed of equal parts of chloride of zinc and sal ammoniac is placed, and the metal to be coated is dipped into the melted alloy, but not allowed to remain therein longer than is necessary to receive a coating. The temperature of the melted alloy must not be carried higher than is sufficient to maintain it in a fluid state. One of the alloys used by the patentees is composed of 10 parts of zinc, 26 parts of tin, and 5 parts of lead. The patentees use also the alloy called "fusible metal," which they prefer to have the following composition:—Bismuth 8 parts, lead 5 parts, tin 3 parts; alloys in other proportions will also do, provided their melting point is below 400° Fahr.

The patentees claim the use, in the manner above stated, of the alloys mentioned or referred to, and of the methods above described for coating metals with such alloys.

Third Process: Coating Iron or other Metal with Tin or Tin alloyed with Lead.—To effect this a bath or vessel of iron or other suitable material is employed, in which the tin or alloy is melted. On the surface of the melted metal a stratum composed of about equal parts of chloride of zinc and sal ammoniac is placed, and the metal to be coated dipped through the stratum of fused salt into the melted tin or alloy until the required coating is effected. The patentees state that they find it advantageous in the use of this and the preceding process to dip the metal to be coated several times, so that it may be brought into frequent contact with the stratum of fused salt on the surface of the melted metal. They also

find it advantageous in the preceding process to dip the iron or other metal into a hot solution of chloride of zinc, rendered slightly acid by excess of hydrochloric acid, previous to its immersion in the bath of melted metal.

The patentees claim the use of a mixture of chloride of zinc and sal ammoniac, forming a saline compound, which is kept in a state of fusion on the surface of the melted tin or alloy, in the process of coating metals with other metals.

Fourth Process: Coating Iron or other Metal with Silver, or Alloy of Silver and Copper.—In this case the surface of the iron or other metal to be coated is first to be amalgamated with mercury in the usual way. The patentees prefer to use for the amalgamating process a mixture of 12 parts of mercury, 1 of zinc, 2 of sulphate of iron, 2 of hydrochloric acid, and 12 of water; this mixture to be heated to 200° Fahr., when the iron or other metal to be amalgamated is placed in the mixture, and the mercury rubbed on its surface. The silver, or alloy of silver, is then melted in a crucible, and the amalgamated metal dipped into it until it has received a due coating of the silver or alloy employed.

The patentees claim the process of coating iron or other metal with silver, or alloy of silver and copper, by amalgamating the surface of the metal to be coated, and then putting it into the melted silver or alloy.

Fifth Process: Coating Iron with Copper, Brass, or any Alloy of Copper, with Zinc, Tin, or Lead.—To effect this the copper or alloy used is first melted in some suitable vessel, and on the surface of the melted metal is placed a stratum of boro-silicate of lead (composed of 112 parts of oxide of lead, 24 parts of boracic acid, and 6 of silica) and, when the metal and the salt are in a state of fusion, the metal to be coated is dipped into the melted metal, and allowed to remain there until it has acquired a coating of the copper or alloy used. The patentees sometimes coat the iron with zinc or tin, or amalgamate its surface with mercury, previous to its introduction into the melted copper or alloy.

Another method of coating iron with copper directed by the patentees is that of exposing it to the vapour of chloride of copper. To effect this the chloride is placed at the bottom of a covered crucible, in the upper part of which is placed the iron to be coated; the crucible is then submitted to a red heat, and the volatilized vapours of the chloride of copper rise and come in contact with the iron, which thus becomes coated with copper.

To coat iron with brass, the iron coated with copper in the way last mentioned is placed in the upper part of a covered crucible, at the bottom of which is some metallic zinc covered with animal or other charcoal; on the application of heat to the crucible the zinc volatilizes, and the vapours, coming in contact with the iron coated with copper, convert the copper into a brass coating. Instead of chloride of copper, a mixture of metallic copper and sal ammoniac may be used, or a mixture of oxide of copper and sal ammoniac.

The patentees claim the use of boro-silicate of lead in a fluid state over the surface of melted copper or brass, or one of the alloys above mentioned, in the process of coating iron by immersion; also the process of coating iron with copper, by the action of fused chloride of copper, or of the mixtures above named, and of coating with brass, by subsequent treatment with the vapours of zinc as above mentioned.

Liebig, with considerable facility of adaptation, is now inclined to ignore the agency of ammonia on vegetables, and to exalt the agency of metallic manures. As usual, he is very angry with those who do not believe with him, and has not left off his unphilosophic habit of using strong language.

The Sale of Arsenic Restriction Bill has given universal satisfaction. The Customs abuses are complained of by the drug importers. Concerning the Pharmacy Bill there is much difference of opinion; in fact, the drug public are not at this moment inclined to look with favour on any measure emanating from the member for St. Alban's, whose past electioneering history has been productive of so much unenviable discussion.

DRUG PRICE CURRENT.

Articles having bd. or bond annexed are sold at short price exclusive of duty; when no duty is affixed the article is free. Add 5 per cent. to the duty on all articles excepting those having an asterisk prefixed.

DRUGS, &c.	Price.	
£. s. d.	£. s. d.	
ALKANET ROOT.....cwt.	1 15 0 @ 2 10 0	
ALOES, Barbadoes.....	1 10 0 @ 6 0 0	
Epatica.....	1 10 0 @ 5 0 0	
Cape.....	1 5 0 @ 1 13 0	
ALUM, British.....ton	7 10 0 @ 8 5 0	
Roch.....cwt.	1 0 0 @ 1 4 0	
AMBERGRIE, Grey.....	0 4 8 @ 0 7 0	
ANGUOVIES.....dble. btl	0 17 0 @ 0 18 0	F. 2d. per lb.
ANGELICA ROOT.....cwt.	1 0 0 @ 1 5 0	
ANNATTO, Flag.....lb.	0 1 8 @ 0 1 10	
Roll.....	0 0 10 @ 0 1 0	
ANTIMONY, Crude.....cwt.	1 8 0 @ 0 0 0	
Ore.....ton.	12 0 0 @ 0 0 0	
Regulus Cps.....cwt.	2 4 0 @ 3 0 0	
Howls.....	2 15 0 @ 2 13 0	
ARROW ROOT.....lb.	0 0 3 @ 0 1 0	B. P. 6d. F. 2s.
ARSENIC, White.....cwt.	0 17 0 @ 0 18 0	
Red.....	0 0 0 @ 0 0 0	
English White.....	0 12 6 @ 0 1 0	
Yellow.....	0 19 0 @ 1 0 0	
ARGOL, Bologna.....cwt.	2 0 0 @ 2 12 0	
Florence White.....	2 0 0 @ 2 4 0	
Red.....	2 0 0 @ 2 5 0	
Naples White.....	1 18 0 @ 2 5 0	
Red.....	1 12 0 @ 1 13 0	
Sicily White.....	1 8 0 @ 1 16 0	
Red.....	1 8 0 @ 1 10 0	
French.....	1 14 0 @ 2 7 0	
Cape.....	1 15 0 @ 2 11 0	
ASPHALTUM, Egyptian.....	2 10 0 @ 4 15 0	
BORACIC ACID.....cwt.	2 12 0 @ 2 13 0	
BALSAM, Canada.....lb.	0 0 10 @ 0 1 0	
Capavi.....	0 1 0 @ 0 1 2	
Peru.....	0 5 6 @ 0 6 0	
Tolu.....	0 3 6 @ 0 4 0	
BARK, Peruvian, pale.....lb.	0 1 5 @ 0 2 6	
Good.....	0 0 0 @ 0 2 0	
Mid., do.....	0 1 1 @ 0 1 2	
Crown.....	0 1 3 @ 0 2 2	
Yellow, Flat.....	0 3 0 @ 0 4 6	
Red, Flat.....	0 2 0 @ 0 6 5	
Quill.....	0 7 0 @ 0 0 0	
Quill.....	0 3 0 @ 0 4 6	
Cascarilla.....cwt.	1 0 0 @ 1 15 0	
Quercitron.....	0 8 6 @ 0 9 6	
Oak, English.....per load	13 0 0 @ 14 0 0	
Foreign.....per ton.	3 6 0 @ 6 5 0	
New S. W.....	5 0 0 @ 8 0 0	
BERRIES, Bay.....cwt.	0 19 6 @ 1 6 0	
Juniper, Italian.....	0 7 6 @ 0 8 0	
German.....	0 8 0 @ 0 12 0	
Turkey, Yellow.....	3 15 0 @ 6 0 0	
Persian, do.....	8 10 0 @ 14 0 0	
BLACK LEAD, E. I.....cwt.	0 10 0 @ 1 0 0	
Malaga.....	0 10 0 @ 1 5 0	
German.....	1 0 0 @ 1 3 0	
Dust.....	0 5 0 @ 0 12 0	
BORAX OR TINCAL.....cwt.	2 10 0 @ 2 13 0	
E. I. Refined.....	2 16 0 @ 2 18 0	
English Refined.....	3 6 0 @ 3 8 0	
BRIMSTONE, Rough.....ton	7 0 0 @ 0 0 0	
Roll.....	12 0 0 @ 0 0 0	
CAMPHOR, Unrefined.....cwt.	3 5 0 @ 3 10 0	
Dutch.....	2 12 6 @ 0 0 0	
* Refined.....lb.	0 1 0 @ 0 1 1	5s. per cwt.
CANTHARIDES, bd.....	0 3 0 @ 0 3 6	3d. per lb.
CAPERS, French.....cwt.	7 0 0 @ 12 0 0	3d. " B.P.
Capotta.....	6 0 0 @ 7 10 0	
CARDAMOMS, Malabar.....lb.	0 2 6 @ 0 2 8	
Long Longs.....	0 3 0 @ 0 3 4	
Ceylon.....	0 1 2 @ 0 1 4	
CASTOR OIL, America.....lb.	0 0 0 @ 0 0 0	
E. I., bd.....	0 0 3 @ 0 0 4	6d. per lb.
CHILLIES, E. I.....cwt.	0 15 6 @ 1 5 0	
CHINA ROOT.....cwt.	0 10 0 @ 1 0 6	
COCHINEAL.....	0 3 8 @ 0 5 0	
Honduras Black.....lb.	0 3 7 @ 0 4 10	
Silver.....	0 2 11 @ 0 3 11	
Mexican Black.....	0 3 4 @ 0 3 9	
Silver.....	0 2 10 @ 0 3 3	
COBALT.....lb.	0 0 0 @ 0 0 0	
COGULUS INDICUS.....cwt.	1 0 0 @ 1 7 0	
COLOCYATH, Turkey.....lb.	0 0 6 @ 0 1 9	
Spanish.....	0 0 11 @ 0 1 6	
COLOMBO ROOT.....	2 16 0 @ 2 19 0	
COFFEEAS, Green, bc.....ton	1 10 0 @ 2 15 0	

DRUGS, &c., continued.

Price.	
£. s. d.	£. s. d.
COFFEEAS Blue.....	1 8 0 @ 1 10 0
CREAM TARTAR, French.....	2 18 0 @ 3 8 0
Venetian.....	3 5 0 @ 3 8 0
CUBBERS.....cwt.	3 10 0 @ 4 5 0
CUTCH.....	0 20 0 @ 0 22 0
COWRIES.....	1 0 0 @ 3 10 0
DRAGON'S BLOOD.....Jump	3 10 0 @ 9 15 0
Reed.....	8 0 0 @ 14 10 0
DYEWOODS:	
Brazil.....ton	45 0 0 @ 80 0 0
Barwood, Angola.....	0 0 0 @ 0 0 0
Gaboon.....	0 0 0 @ 0 0 0
Camwood.....	13 15 0 @ 28 15 0
Fustic, Brazil.....	0 0 0 @ 0 0 0
Cuba.....	8 10 0 @ 9 0 0
Jamaica.....	5 0 0 @ 5 10 0
Spanish.....	4 0 0 @ 4 10 0
Zante.....	0 0 0 @ 0 0 0
Logwood, Campeachy.....	6 10 0 @ 6 15 0
Honduras.....	5 0 0 @ 5 10 0
Jamaica.....	2 10 0 @ 4 0 0
St. Domingo.....	4 0 0 @ 5 0 0
Nicaragua, Lima.....	14 0 0 @ 15 0 0
solid.....	12 0 0 @ 17 0 0
small and mid.....	6 10 0 @ 12 0 0
Red Sanders.....ton	4 10 0 @ 5 15 0
EMERY STONE.....	12 0 0 @ 13 0 0
* ESSENTIAL OILS	
Cloves, bd.....lb.	0 2 8 @ 0 5 4
Caraway.....	0 6 3 @ 0 5 4
Lavender.....	0 3 6 @ 0 7 0
Peppermint, bd.....	0 4 0 @ 0 10 0
Spice.....	0 4 0 @ 0 0 0
Aniseed, bd.....lb.	0 0 0 @ 0 5 8
Cassia, bd.....	0 9 0 @ 0 9 6
Ca. apule, bd.....oz.	0 0 33 @ 0 0 4
Cinnamon, bd.....	0 0 10 @ 0 3 0
Mace (expd.), bd.....	0 0 3 @ 0 0 5
Nutmegs, bd.....	0 0 4 @ 0 0 5
Bergamot.....lb.	0 9 0 @ 0 9 9
Lemon.....	0 8 6 @ 0 8 9
Orange.....	0 6 9 @ 0 7 0
Rosemary.....	0 1 8 @ 0 2 6
Thyme.....	0 3 9 @ 0 3 6
Otto Roses.....oz.	0 13 6 @ 1 0 0
Almonds.....lb.	1 5 0 @ 0 0 0
GALANGAL ROOT, bd.....cwt.	0 14 0 @ 1 0 0
GALLS, sorts.....cwt.	4 0 0 @ 4 10 0
Green or White.....	2 15 0 @ 3 10 0
Blue.....	4 12 0 @ 5 5 0
E. I. Blue.....bd.	3 10 0 @ 5 0 0
GENTIAN ROOT.....cwt.	1 1 0 @ 1 2 0
GLUE, Best Town.....cwt.	1 5 0 @ 1 0 0
Interior.....	0 0 0 @ 0 0 0
Foreign.....	1 10 0 @ 2 5 0
GUINEA GRAINS, bd.....	2 5 0 @ 0 0 0
GUTTA PERCHA.....lb.	0 0 6 @ 0 0 8
GUMS:	
Ammoniac, Lp.....cwt.	0 9 6 @ 1 10 0
Drop.....	1 15 0 @ 3 15 0
Arabic, E. I.....	1 0 0 @ 4 12 0
Cape.....	0 12 0 @ 1 2 0
Turkey, fine.....	8 10 0 @ 10 0 0
2nds and 3rds.....	3 10 0 @ 6 0 0
Australian.....	1 17 0 @ 2 0 0
Barbary, Brown.....	1 15 0 @ 2 10 0
White.....	3 5 0 @ 2 15 0
Gedda.....	5 0 0 @ 6 0 0
ANIMI, washed.....	3 0 0 @ 12 0 0
scraped.....	6 0 0 @ 13 0 0
Copal.....lb.	0 0 6 @ 0 2 8
ASAFOETIDA.....cwt.	0 10 0 @ 4 10 0
BENJAMIN, 3rds.....	4 0 0 @ 9 10 0
1st and 2nds.....	10 0 0 @ 45 0 0
DAKMAR.....	1 10 0 @ 1 18 0
GAMBAGE.....	5 0 0 @ 10 0 0
GALBANUM.....	2 10 0 @ 3 0 0
GULACUM.....lb.	0 0 6 @ 0 1 0
MYRRH, E. I.....	2 0 0 @ 10 0 0
Turkey.....	0 0 0 @ 0 0 0
MASTIC.....lb.	0 3 8 @ 0 6 6
OLIBANUM.....cwt.	0 10 0 @ 2 14 6
SANDRACH.....	2 10 0 @ 3 10 0
SENEGAL, garbled.....	3 0 0 @ 4 10 0
TRAGACANTH, Picked.....	13 0 0 @ 16 0 0
Sorts.....	5 0 0 @ 10 0 0
LAC, Sticklac, Bengal.....	0 17 0 @ 1 15 0
Siam, &c.....	2 10 0 @ 3 8 0
Shellac, Liver.....cwt.	2 2 0 @ 2 5 0
Ruby.....	2 5 0 @ 2 10 0
Orange.....	2 5 0 @ 2 18 0
Black.....	1 1 0 @ 2 5 0
Blood.....	2 0 0 @ 2 8 0
Seedlac.....cwt.	1 0 0 @ 2 0 0

3s. per lb.

1s. per lb.

2d. per lb.

15s. per cwt.

5s. per cwt.

3d. per lb.

3d. " B.P.

6d. per lb.

DRUGS, &c., continued.		Price.	
		£. s. d.	£. s. d.
HILLEBORN ROOT.....cwt		1 18 0	0 0 0
HONEY, Fide.....		1 8 0	0 3 0
B.P. 5 F. 10s.			
ICELAND MOSS.....lb.		0 0 2	0 0 2
INDIA RUBBER, solid		0 0 8	0 0 9
bottles.....		0 1 0	0 1 8
small.....		0 1 9	0 2 6
INDIGO.....Soras.....lb.		0 4 2	0 4 7
Bengal, fine blue		0 6 0	0 6 4
good and fine violet and purple		0 5 6	0 5 9
ordinary and middling.....		0 4 7	0 5 0
good and fine copper.....		0 5 4	0 5 8
ordinary and middling.....		0 3 9	0 5 0
Consumers, good and fine		0 4 8	0 5 2
ordinary and middling.....		0 3 9	0 4 6
Java, good and fine.....		0 4 3	0 6 8
Oude, good and fine.....		0 3 3	0 4 6
ordinary and middling.....		0 2 2	0 3 2
Madras, good and fine.....		0 3 1	0 4 3
ordinary and middling.....		0 1 9	0 3 0
Kurpah, good and fine.....		0 3 6	0 5 6
ordinary and middling.....		0 2 0	0 3 5
Manilla good and fine.....		Withdrawn.	
ordinary and middling.....			
IPECACUANHA.....lb.		0 5 0	0 5 6
ISINGLASS LEAF, 1st sort		0 10 0	0 13 6
2nd sort.....		0 9 0	0 10 0
Simovia.....		0 2 0	0 2 9
Siberia Purse.....		0 5 0	0 6 0
Short Staple, 1st.....		0 8 0	0 14 0
Long ditto.....		0 10 0	0 14 0
ISINGLASS, Brazil.....		0 0 6	0 5 6
JALAP.....lb.		0 5 0	0 2 2
JUICE OF LEMON.....gal.		0 0 10	0 1 0
LAC DYE, Fine.....lb.		0 1 8	0 2 5
Good.....		0 1 4	0 1 0
Middling.....		0 0 11	0 1 8
Ordinary.....		0 0 6	0 0 11
Lake.....		0 0 3	0 0 8
LIQUORICE Paste, Ital.....cwt.		3 5 0	0 12 6
Block.....		4 0 9	5 15 0
F 1 0 0 cwt. BP 10 0 cwt.			
MADDERS,			
Dutch Crop.....cwt.		2 6 0	2 10 0
Ombre.....		2 2 0	2 5 0
Gamra.....		1 5 0	1 10 0
Mull.....		0 8 0	0 12 6
French.....		0 0 0	0 0 0
Spanish.....		1 10 0	2 0 0
MADDER ROOT, Turkey.....		1 6 0	1 10 0
MUNSEY, E. I.....cwt.		0 18 0	0 1 2
MAGNESIA, English.....		2 0 0	2 2 0
MANNA, Flakey.....lb.		0 3 0	0 3 6
Sicily.....		0 1 0	0 1 6
MUSK, good and fine.....oz.		0 10 0	0 5 0
NUX VOMICA, bd.....cwt.		0 7 6	0 9 8
5 0 p. cwt.			
OLIVES, French 1/2 bars 2 gals		3 0 0	4 0 0
Spanish, keg 2 galls.....		0 9 0	0 10 0
OPIMUM, Turkey, bd.....lb.		0 10 6	0 11 9
Egyptian.....		0 7 8	0 8 6
ORCHILLA, Angola.....ton		25 0 0	0 0 0
Cape de VerJ.....		25 0 0	0 35 0
Madeira.....		30 0 0	0 0 0
ORPIMENT, E. India.....		0 0 0	0 0 0
ORANGE FLOWER water.....		0 0 8	0 0 0
Peel.....cwt		0 0 0	0 0 0
ORRIS ROOT.....cwt.		1 18 0	2 2 0
PELLITORY ROOT.....lb.		0 0 6	0 0 0
PINK ROOT.....lb.		0 0 5	0 0 8
PITOM, Burgundy.....cwt.		0 0 0	0 0 0
PUMICE STONE, sorts.....ton		5 0 0	8 0 0
QUASSIA.....cwt		0 8 0	0 12 0
QUICKSILVER.....lb.		0 3 9	0 0 0
RHATANIA ROOT.....lb.		0 0 5	0 0 8
RHUBARB, round.....		0 0 6	0 3 3
Flat.....		0 0 8	0 3 3
Dutch, trimd.....		0 2 6	0 3 9
Russian.....		0 10 0	0 12 0
SACCHARUM SATURNI, bd.....lb.		0 0 0	0 0 0
SAFFRON, Spanish.....lb.		1 1 0	1 8 0
*SAGO common.....cwt		0 18 0	0 18 6
Pearl.....		0 19 0	1 3 6
Sago flour.....		0 14 0	0 15 0
SAL AMMONIAC, E. I.....cwt.		1 10 0	1 13 0
English, refined.....		1 18 0	2 2 0
SALTS, Glauber.....		0 6 6	0 7 0
Kpsom.....		0 6 0	0 6 6
SALEP.....		18 15 0	0 14 5 0

Public Sale Prices.

DRUGS, &c., continued.		Price.	
		£. s. d.	£. s. d.
SARSAPARILLA, Brazil.....lb.		0 0 10	0 0 1 3
Honduras.....		0 0 10	0 0 1 6
Vera Cruz.....		0 0 4	0 0 5
Jamaica.....		0 1 6	0 2 3
SASSAPRAS ROOT.....ton		10 0 0	0 12 0 0
SAFFLOWER, E. I.....cwt.		5 0 0	0 8 0 0
Bombay.....		1 5 0	0 2 0 0
SHUMAC, Malagh.....cwt.		0 12 0	0 13 6
Sicily.....		0 14 6	0 15 0
Trieste.....		0 4 6	0 6 6
SALTPETRE, Rough.....		1 6 0	0 1 9 6
British, Refined.....		1 9 0	0 1 9 6
Nitrate of Soda.....		0 14 3	0 14 6
British, Refined.....		0 0 0	0 0 0
SCAMMONY, Smyrna.....lb.		0 5 0	0 7 0
Aleppo, Snds.....		0 10 0	0 15 0
fine.....		1 8 0	0 1 15 0
SEEDS, Aniseed.....cwt.		2 2 0	0 2 5 0
German.....		2 2 0	0 2 5 6
E. I. Star.....		3 5 0	0 3 10 0
Cummin.....		2 15 0	0 3 10 0
Caraway, Foreign.....		0 19 0	0 1 10 0
SENEKA ROOT.....lb.		0 0 6	0 0 1 0
SENNA, Alexandria.....lb.		0 0 2	0 0 6
Smyrna.....		0 0 0	0 0 0
East India.....		0 0 1	0 0 5
Tinnevely.....		0 1 0	0 1 6
SMALTS, Saxon, FFFE.....lb.		0 1 2	0 0 0
FFFFE.....		0 1 7	0 0 0
Danish, FFFE.....		0 1 3	0 0 0
FFFFE.....		0 1 8	0 0 0
SWAKE ROOT.....lb.		0 0 4	0 0 8
SOAP, Naples, soft.....		0 1 6	0 1 9
Castile, hard.....		3 0 0	0 0 0
Soy, bd.....gallon		0 4 0	0 4 6
SPONGE, fine.....lb.		0 9 0	0 1 5 0
ordinary.....		0 1 0	0 7 6
SULPHATE OF QUININE.....cwt.		0 11 9	0 12 0
SQUILLS, dry.....lb.		0 0 1	0 0 2
undried.....		0 0 0	0 0 0
SPERMACEY, English.....lb.		0 1 4	0 1 5
American.....		0 0 0	0 0 0
TAMARINDS, West Ind.....cwt.		2 0 0	0 3 15 0
East Ind., bd.....		0 13 0	0 0 16 0
*TAPICA.....lb.		0 0 2	0 0 4
TURMERIC, Bengal.....cwt.		0 16 0	0 18 0
Java.....		0 10 0	0 13 0
Madras.....		0 12 0	0 14 0
China.....		0 0 0	0 0 0
TERRA JAPONICA.....cwt.		0 15 6	0 16 0
Sienna.....		1 2 0	1 4 0
VALONIA, Smyrna.....ton		16 0 0	0 17 0 0
Picked Morea.....		12 0 0	0 14 0 0
VINELLOES, Brazil.....lb.		0 10 0	0 0 10 0
Vera Cruz.....		1 5 0	0 1 10 0
VERDIGREASE, Foreign.....		0 0 9	0 0 10
English.....		0 1 3	0 0 0
VERMILION, China.....lb.		0 4 0	0 4 2
English.....		0 5 0	0 0 0
VITRIOL, blue.....		1 8 0	0 1 10 0
Foreign, white.....		0 14 0	0 0 0
English, ditto.....		1 4 0	0 1 5 0
Oil of.....		0 0 1	0 0 9
WAX, Mogadore.....cwt		5 17 6	0 6 10 9
American.....		5 5 6	0 0 0
Russian.....		7 10 0	0 0 0
Hambro.....		7 12 6	0 8 0 0
East India.....		4 7 6	0 8 2 0
African.....		5 0 0	0 7 0 0
White Hambro.....		7 0 0	0 8 10 0
English.....cwt.		2 0 0	0 9 15 0
Cape.....		5 15 0	0 6 18 0
West India.....		0 0 0	0 7 0 0
WELD.....load		0 0 0	0 0 0
WOAD.....ton		0 0 0	0 0 0
WOOD, Sapan Bimas.....		1 0 0	0 1 15 0
Siam.....		8 0 0	0 1 0 0

10s. per cwt.

20s. per cwt.

B.P. 1d.
F 3d.
6d. per cwt.

5s. per cwt.

5s. per cwt.

5 0 p. cwt.

0 2 0 gall.

0 1 0 p. lb.

PUBLIC SALES OF DRUGS.

July 10th.—By G. BROOKS and J. CLAXTON.—350 casks Turkey Gum Arabic out, fair brown sorts, 53s. to 67s. 6d., dark red, 27s. 6d.; 66 cases picked Arabic, part sold, good, £8 to £8. 5s., yellow, £3. 12s. 6d. to £5. 5s.; 187 Alexandria Senna, mostly sold, stalky, 2½d. to 2½d., fine, 6d. to 6½d.; 14 pkgs Colocynth out, 10d. to 11d.; 54 casks Turkey blue Galls out, 97s. 6d. to 100s. for fine, 77s. 6d., sorts; 14 serons Ipecacuanha out, 5s. 6d. to 5s. 6d.; 2 chests Tragacanth, £6. 14s. to £40; 11 cases Turkey Sponge, 2s. 2d.

to 14s. 3d.; 6 casks Australian Gum out, 38s.; 5 cases Turkey Opium, 19s. 9d.; 10 pkgs Scammony, 15s. 6d. to 19s. 9d., and 6s.; 2 cases Oil Sassafras, 2s. 5d.; 4 cases Salep; 17s. 6d.; 1500 ounces Otto Roses, 14s. 9d. to 18s.

July 10th.—By J. MOCATTA.—152 gourds Barbadoes Aloes, 30s. to 35s., sold; 34 bales Jamaica Sarsaparilla, part sold, 2s. 7d. to 2s. 10d.; 18 chests East India Gum out, ordinary mixed sorts, 38s.; 38 casks Arrowroot out, 4d.; 4 chests Madras Cardamoms, sold, 1s. 10d. to 1s. 11d., inferior, 1s. 8d.; 9 casks Blacklead, 4s. 6d. out; 2 pkgs Cantharides sold, 2s. 9d., 2s. 7d.; 1 case fine Gum Dragon, £14. 10s.; 2 casks Cream Tartar, 66s.; 5 tons Fustic, £4; 12 tons green Ebony, £6. 10s. out.

July 10th.—By T. MERRY and SON.—20 casks Cream Tartar, small part sold, 68s. to 68s. 6d.; 12 cases picked Gum Arabic, good small, £7 5s. to £7. 7s. 6d., brown, £4. 15s. to £4. 17s. 6d.; 4 caddies Musk out, 25s.; 1 bottle grain ditto out, 55s.; 2 chests yellow Bark, 5s. 6d.; 1 case Oil Roses out; 24 bales Chillies, small and dark, 20s.; 13 bags Sargiuna, 21s.; 54 bags Copal, small South American sort, 34s. to 35s., fine bold, 70s.; 50 barrels Tapioca, 3d.; 13 casks Sandrac, 40s. to 52s.; 1 chest Opium out; 1 drum fine Scammony, 24s.; 33 kegs W. I. Tamarinds out, 35s.

July 10th.—By GRAY and CO.—96 cases Castor Oil, good seconds, 3½d. to 4d., fair, 3½d., straw, 2½d. to 3d.; 11 serons Ipecacuanha sold, 4s. 6d.; 5 casks Cream Tartar, small fair, 64s. to 66s.; 28 bags Pod Pepper out; 1 case Cloves sold, 1s. 1d. for good Penang; 9 cases Cardamom Seeds, 4d.; 2 boxes Gum Mastic, blocky yellow, 1s.

July 10th.—By LEWIS and FRAT.—135 cases Castor Oil, fair pale seconds, 4d. to 4½d., middling, 3½d. to 3¾d., straw, 2½d. to 3d.; 32 chests Olibanum part sold, 49s. to 40s. 6d., inferior, 15s. to 30s. 6d.; 22 chests Myrrh out, dark, horny, and spurious, 60s.; 7 bales Honduras Sarsaparilla sold, 1s. to 1s. 1d., rest in, 1s. 3d.; 8 bales Bees' Wax ordinary yellow, £6. 15s. to £6. 17s. 6d.; 3 kegs Aloes, 54s. 6d.; 2 casks Flag Annatto out; 16 bags Nux Vomica out, 10s.; 70 hhds Guinea Grains good dark, 45s.; 4 cases Liquorice, 52s. 6d. to 58s.; 15 barrels West India Tamarinds out, 41 casks E. I. ditto, low dark, out, 12s.; 12 casks Jamaica Honey, 44s. to 49s.; 1 cask Cream Tartar, sold 58s.; 10 casks Brown Tartar small Naples, 49s.; 26 casks Naples Argol, fair white, out, 38s.; 20 bales Alkanet Root sold, good small, 36s. to 38s.; 9 bales Bahama Sponge out, 8d.; 311 gourds Aloes sold, Barbadoes, 22s. to 82s. 6d., Socotrine, 32s. to 34s.

July 10th.—By ELLIS and HALE.—50 Cape Aloes sold, middling to good, 30s. to 38s.; 50 chests Olibanum, part sold, good yellow drop, 41s. to 41s. 6d., grey and blocky, 19s. 6d. to 20s., siftings, 12s. 6d. to 14s. 6d.; 12 chests Gum Arabic, out, 19s. to 45s.; 31 casks Picked Turkey Gum Arabic, seconds, £6 to £7, inferior, £5; 12 pkgs Australian Arabic, good middle red, 40s. to 41s., good but rather woody, 38s.; 8 chests Gum Myrrh, mixed, £8. 10s., pale horny, 42s. 6d., dark ord, 60s.; 13 chests Gum Ammoniacum, 9s. 6d. to 14s.; 7 cases Gum Damar, fair but stalky, 30s. to 33s.; 99 bales Alexandria Senna out; 33 bales E. I. Senna, 1½d. out; 4 bales Tinnevelly Senna out, 1s.; 72 bottles Citronnelle Oil, fair to fine, 6d. to 9d. out; 24 bottles Lemon Grass Oil, good, out, 6d.; 72 bottles Croton Oil, dark, 6d. to 7d.; 2 cases Oil Spearmint, 6s.; 225 bags Castor Seeds, sold 4s. 6d. to 5s.; 6 hhds. Soy, out, 6s.; 1 tins Vanilloes out, 32s. to 35s.; 14 cases Button Shellac, out, good pale seconds, 50s., dark, do., 42s.; 2 chests fine E. I. Copal, £6, rather milky, 80s.; 1 case Gum Tragacanth out; 11 arns Ipecacuanha out, good at 5s.; 6 casks Cream Tartar, good small, 67s.; 5 cases Seedlac, good Orange, 30s.; 3 cases Balsam Tolu, 4s.; 8 chests Gum Animi, £6 out; 70 brls Plumbago, very small ordinary, 6s.; 10 cases Oil Anniseed, good, 6s.; 50 mats Gum Arabic, rather ordinary sorts, 36s.; 14 casks Cod Liver Oil, 4s.

July 10th.—By S. RUCKER and SONS.—46 chests Gum Benjamin, sold, fine thirds, £11. 2s. 6d.; other sorts, £6. 12s. 6d. to £10. 2s. 6d.; 20 casks Gamboge, out good pipe and cake, £10, dark mixed, £7; 14 chests Dragons', £9. 10s. to £9. 15s., dust and block, £8, damp, £9. 5s.; 50

cases Gum Arabic, out; small pale sorts at 48s.; 104 cases 6 casks Camphor, partly sold, 70s.; 13 casks Cream Tartar out, 56s. to 60s.; 16 tins Saffron, out good fresh, 23s.; 4 casks Cantharides out, 3s. 8d.; 16 bales 85 boxes Isinglass; but small Manila, 1s, good stout cake, 2s. 6d., slightly damaged rather mouldy, 2s.; 1500 pockets Turmeric, good Bengal rather heavy coat, 17s.; 10 tons Gutta Percha, fine, 9d.; 19 baskets India Rubber, 8d. to 9d.; 30 tons Siam Buffalo Horns, 36s. 6d.

MISCELLANEOUS.

The visit of the Prince Consort to Ipswich on the occasion of the meeting of the British Association has been a fertile topic of congratulation to English philosophers, who see in it an indication of a more kindly state of feeling between the ruling powers of this nation and scientific men than has hitherto existed. During the description by Dr. Lyon Playfair of Mercer's processes of treating cotton, the Prince interposed some chemical questions, very much to the purpose, and very different to the listless platitudes of a mere curiosity-seeker.

The chemical world is full of the highly interesting, and we may say poetical, oration of M. Dumas, of which we have given an abstract in another part of our paper. However much it has been the fashion to ridicule the opinions of the alchemists so far as relates to the transmutation of metals as absurd, we have often felt that a temperate use of the logic of chemistry did not lead to such demonstration of absurdity. We are glad, therefore, to see such men as Dumas and Faraday contemplate the possibility of transmutation with a calm expression of their belief in its possibility.

The water question still continues to be a theme of much parochial controversy. Many an orator has been created by its discussion—made to stand out large and grandiloquent before his parish board—who would have died in obscurity under less favourable circumstances. Unfortunately, however, the Government does not seem to have caught the genius of the water question. The real point at issue is, the purity in quality, and sufficiency in quantity, of the water supplied by the nine different metropolitan companies. The Government has merely devoted itself to the solution of the question whether the nine different companies now meeting out their aqueous wares should not be consolidated into one. The discussion of the water question before the committee of the House has betrayed an amount of chemical ignorance which is painful to contemplate.

The necessity of noticing, in some shape, the manifold contents of the Industrial Exhibition has put on their metal the various organs of the metropolitan press. The attempts which some of the journals have made at scientific criticism are amusing from their blunders. We will not cite names in this case:—but when our task is to indicate creditable reviews there need be no concealment. The *Morning Chronicle* has been conspicuous for its elaborate critiques on the various scientific contents of the Crystal Palace. Not one large or important department of scientific manufacture there represented that has not been reviewed by this paper in a manner worthy of a purely scientific journal. We trust that when the series is complete the *Chronicle* will publish it alone. It would be a pity that so well-digested a mass of practical science should be consigned to the cumbrous files of an unwieldy folio; mixed with other matter, interesting enough for the day, but endowed with no qualities of perennial life.

Great fears are entertained that the cholera is again about to visit us with its ravages. The desolation caused by this scourge in our West India Islands is well known, and new intelligence has been received of a fearful outbreak in the largest of the Canary group.

"The first question that arises," remarks the British viceroy of the Grand Canary, "is, how was this disease communicated to so isolated a place? So many theories have been broached as to its being purely atmospheric, and not by any means contagious, that I am almost afraid of venturing an opinion, but, as my duty is merely to state the generally asserted facts, and not to enter upon theory, I shall do so to the best of my knowledge.

You are aware that during the prevalence of this epidemic in Europe, even when it reached Cadiz, these islands as well as Madeira were preserved intact; the usual course of the winds is from that direction; there has been no change noted in this respect within these last months. The cholera has latterly been making great ravages in the West Indies, a position diametrically opposed to the current of the air. It appears, therefore, almost impossible that we should have received the germ of this destroyer simply through the atmosphere. The credited reports here tend to a contrary opinion. About the 8th or 9th of May a vessel arrived from the Havannah with a clean bill of health, and was consequently admitted to pratique without any preliminary fumigation. It is said that the first house in San José (a suburb principally inhabited by poor people) in which this disease made its appearance was that of a washerwoman who had taken the mattress and foul clothes of one of the poorer passengers to wash, and that her children slept upon them during the night. Death soon followed; one neighbour after another was slowly but gradually attacked; the seed had found its appropriate soil, and slowly but too surely germinated, and when the air was sufficiently contaminated its fatal effects were generalized."

Surely the circumstances detailed by the vice-consul point to the theory of contagion, and, if we mistake not, many advocates in London of a contrary opinion up to the period of the last melancholy visitation were then constrained to alter their minds on this point. The contagiousness or non-contagiousness of cholera is a matter of vital importance to all; and we anxiously look forward to the European congress of quarantine commissioners for some precise testimony on this point.

The recent disclosures of the *Lancet* sanitary commission have shown us that chicory as sold is a somewhat disgusting material. The following facts will not tend to elevate the character of this so-called harmless adulteration:—

On Wednesday Mr. John Liddle, a surgeon, of 4, Allie-place, Whitechapel, who has interested himself for some time past in sanitary improvements, came before Mr. Ingham with a deputation of the inhabitants of Great Allie-street, to complain of the most intolerable nuisance of a chicory and roasted grain manufactory, which had seriously affected the health of the residents of the immediate neighbourhood.

Mr. Liddle said the gentlemen present had joined him in coming forward to complain of the nuisance, and to request the magistrate's kind interference to remove the most offensive manufactory which could be established in such a crowded locality as Great Allie-street, which was intersected with courts and alleys. From an early hour of the morning until the middle of the day, and sometimes till a late hour in the evening, the smell of roasted grain, chicory, and other substances was exceedingly disagreeable. The effluvia from the manufactory was exceedingly hot and pungent, and had affected the health of every one present. He was accustomed to many nuisances in the course of his professional duties, and was not very fastidious, but he could assure the magistrate that his own health had suffered greatly by the nuisance, while the health of his wife had been more seriously impaired by it.

Mr. Ingham, the magistrate, regretted the inadequacy of his power, and advised the indictment of the chicory manufactory for nuisance.

The deputation thanked the magistrate for his courtesy and attention, and retired; and one gentleman, as he was leaving the court, said, "We may thank Sir Charles Wood for this burnt chicory manufactory; my throat is dried up with it."

For the advantage of the chemist and druggist we now finish our gossip by appending a few

CHOICE RECIPES.

GREASE OF HORSES' HEELS.—Grease is an inflammation of the heel, particularly of the hind legs, arising from sudden changes of temperature to which the horse is exposed; very often from the heels of the horse being exposed to the draught of cold air from the stable-door, the accumulation of dirt in the stable, &c. To cure it, first wash the legs well with soft soap and warm water, then apply the following:—

Ointment.—Yellow wax 2 oz., sweet oil 8 oz.; melt together, and add $\frac{1}{2}$ oz. of sugar of lead. Should the heels crack, poultice them with carrots, boiled soft, or with linseed meal, and anoint with this caustic.

Wash.—Bluestone 2 drachms, alum 2 drachms, water 1 pint. When the inflammation has abated, leave off the poultice, and anoint with the ointment as before.

JALAP AND SQUILLS DRAUGHT.—Tincture of jalap 2 fluid drachms, vinegar of squills 1 fluid oz., peppermint water $\frac{1}{2}$ fluid oz.

JALAP—ELIXIR OF.—Jalap 4 oz., scammony 4 drachms, gamboge 2 drachms, rectified spirit 1 quart.

JALAP—EXTRACT OF.—Jalap 2 $\frac{1}{2}$ lbs., rectified spirits of wine 1 gallon; macerate for four days, and express the liquid. Boil the residue in two gallons of water, and strain. Distil off the spirit from the tincture, till the latter acquires the consistence of honey, then mix it with the decoction, also brought to the same consistence by boiling; stir both well together, and continue the boiling till hard enough.

DISTEMPER IN DOGS.—The following are each about a dose for a full-grown pointer. They must be increased or diminished in proportion to the size and strength of the dog.

Take of opium 3 grains, emetic tartar 5 grains. To be given at night. Repeat the dose every third night, till the dog is recovered; taking care to keep him in a warm place, and always fed with a warm liquid diet, such as broth, gruel, &c. If the nostrils should discharge, have them washed or syringed twice a day with a lotion of sugar of lead; putting about $\frac{1}{2}$ oz. of either to a pint of water.

Take of jalap powder 30 grains, calomel 8 grains. Made into a pill with a little gum water. One of these doses, mixed with butter, or in a small piece of meat, should be given to the dog every morning, on an empty stomach. The food should be light, and easy to digest; and the lotion, if required for the nostrils, should be observed here, as before mentioned.

Boil jalap-root, previously well bruised, for four hours in water; strain through a cloth, and boil the liquor which passes through the cloth until the extract is of proper consistence.

Jalap medicines should always have a little aromatic powder mixed with them to prevent griping, as cloves, cinnamon, ginger, &c., or else a little sulphate or subcarbonate of potass.

JALAP POWDER.—Jalap powder 8 oz., cream of tartar 6 oz., ginger 2 drachms. Mix all well together, and take from 20 to 60 grains as a purgative in habitual costiveness.

SPECIES PRO CONF. AROM.—Croci, lbij.; sem. card., 3ij.; cinnam., 3xij.; myrist., 3xij.; caryoph., 3vj.

P. CONF. AROM.—Species ut supra, lbv.; p. curcum., lbij.; sacch. alb., lbxxvj.

DEFENSIVE CERATE.—Emp. simp., $\frac{1}{2}$ lb.; ol. olivæ opt., xvij.; cretæ prep., acet. dest., aa, 3xij.

MARKING INK (without preparation).—Argent. nit., 3ij.; potass. carb., 3ij.; cupri ammon., 3ij.; suc. virid., 3ss.; P. acaciæ, 3j.; aq. destil., 3ij.

UNE. CAMPH.—Adipis, 3iv.; ceræ alb., 3j.; mellis, 3ij.; camphoræ 3ss.; liq. plumbi, 3j.

CAMPHORATED HONEY.—Camphoræ, 3iss.; cetacei, 3j.; ol. ricini opt., 3iv.

PIL. STYRA.—Styracis, 3viss.; ext. glycyrrh., 3xij.; P. opii, 3iv.

LEAMINGTON WATER.—Magnes. sulph.; sodæ sulph., aa, 3vj.; sodæ hydrochlor., 3iv.; calc. hydrochlor., $\frac{1}{2}$ lb.; aquæ, lbvj.

EFFERVESCENT MAGNESIAN APERIENT.—Magnes. bicarb., sodæ sesquicarb., aa, 3xxvj.; magnes. sulph.; potass. bicarb.; sacch. alb., aa, 3xxiv.; acid. tart., 348.

Previous to mixing let each of the ingredients be thoroughly dried and brought into a fine powder.—RD. BREKETT.

ARTIFICIAL LEMON JUICE.—Acid. citric., 3iv.; aq. destil., 3x.; ol. limon., g. ij.; sp. rect., 3ss.

LAKE LIQUOR.—Cocci, 3ij.; aluminis, 3ij.; potass. subo., 3viij.; potass. bitart., 3viij.

Pour 1 quart of boiling water over the cochineal, add the potass, and boil. Afterwards add the cream of tartar and alum; and, lastly, filter the liquor.

PULV. LUNÆ Co.—Cretæ, lbj.; Pulv. Iridis, ʒij.; oss bergam. q. s.

This is called "lunar powder," and "*love powder*," silly young people imagining it to have a charm over the object of their troubled affections.

RED INK.—Use the above liquor.

GUM FOR LABELS.—Gum. trag. elect., gum acaciæ, aa., ʒj.; acet. destil., aquæ destil., aa., ʒviij.

SHEEP DIPPING COMPOSITION.—Arsenic, ʒlb.; soft soap, 6lb.; pearlshes, ʒlb.; gum-res., asafotidæ, ʒlb.; water, 2½ gallons.

Boil the water slowly, having the potash and gum within, till they are dissolved; then add the soap.

••• 1 gal. or 9lb. of the above is the proper quantity to be mixed with 30 gals. of water for dipping.

AMMONIACAL LIQUOR.—Liq. ammon., fortiss., ʒvj.; aq., ʒxviij.; sapon. alb., ʒiij (avoirdupois).

ʒss ad. oj. aq. tepidæ.

PATENT DRYERS.—Ol. lini cocti, 1 cwt.; zinci sulph. imp., 14 lb.; liiharg., 14 lb.; ferri sulph. oxyd. alf., 14 lb.; plumb. acet., 7 lb. Boil for an hour, and add barytæ carb., 14 lb.

Boil and strain through a hair sieve whilst hot.

NEUTRAL CREAM.—Emp. plumbi, lbj.; ol. olivæ, ʒxij.; melt, and add acet. destil., ʒxij.; oretæ prep., ʒviij.; aq. q. s.

ACETIC ACID.—Plumb. acet., 38 parts; acid. sulph., 12 parts.

Distil with a gentle heat.

PRESTON SALT.—(For one dozen bottles.)—Ammon. hydrochlor., ʒvj.; potass. carb. (subc.), ʒiij.; ol. caryoph., g. xx.; cinnam., g. viij.; roxismar, g. xij.; limon., g. xx.; berg., g. x.; camph., gr. xij.; mosch., gr. j.; sp. rect. ʒj.; liq. ammon. fortissim., ʒss.

CAMPHORATED VINEGAR.—Camphor 1 oz. powdered with 20 drops of spirits of wine; then rub it well in a mortar with 2 oz. of sugar, and added 1½ pint of best white wine vinegar. Shake until all is dissolved. Dose from ½ to 1 oz.

CAMPHORATED WINE.—Dissolve ½ oz. of camphor in 6½ oz. of wine. It will be necessary first to add to the camphor a little spirits of wine, to dissolve it the more readily and completely.

CAMPHORATED SPIRIT.—Dissolve 1 oz. of camphor in half a pint of spirits of wine. Used for chilblains, rheumatism, &c., and is much recommended by dentists as an excellent wash for the teeth and gums.

DINNER PILLS.—Take 2 drachms of extract of quassia, essential oil of peppermint 1 or 2 drops; make into 12 pills, and take 2 or 3 before dinner.

TO CORRESPONDENTS.

REPORTS OF SOCIETIES.—Gentlemen who send us reports of societies should be particular in specifying dates. No mere abstracts from published works (reports of transactions excepted) can be received.

"H. Elliott."—The term hardness as applied to water is far too indefinite for practical purposes, and hence the expressive degree of hardness must necessarily be creative of an un-ound idea of correctness. Each degree of hardness, according to Dr. Clarke's table, corresponds to one grain of carbonate of lime per gallon. We do not think any reliance is to be placed on that table, an opinion in which we find Professor Brande participate, according to his evidence given before a parliamentary committee convened on the 4th instant. The metropolis, if provided with water on the constant-supply system, would require a gross supply of fifty million gallons per diem. It is now conceded, we believe, that fifty million gallons could not be obtained at one time from the Danube.

"An Inquirer."—Ipswich, the seat of the British Association this year, derives its name from the River Gipping, while here connects itself with the Orwell. In Down-day Book it is spelt "Gyppeswid," "Gyppewicz," "Gippeswic," and afterwards "Xyppeswyche" but, divested of all superfluities, it now stands before us plainly and simply Ipswich. The O. well was called in the Saxon annals Arwan; probably it was originally Arwell, as we have Arwerton on one side of it, and Arwich (Harwich) on the other; at which place it empties itself into the German ocean.

"Henry Maillison."—The patent agent we recommend for accomplishing your wishes is Mr. Carmichael, of No. 3, Old-square, Lincoln's inn. Of the three United Kingdom patents the Irish one is the most expensive.

"H. N. O., Keswick."—We are not aware, at present, of any situation that would suit you; but, by entering your name in the register at the office of the CHEMICAL RECORD, probably you would succeed without the necessity of waiting long in London. At first the National Exhibition unquestionably proved a drag to business; the fatness, however, has

greatly worn off, and probably we shall soon have a preternatural briskness.

"A Chemical Author."—It is impossible that we can enter into any provisional arrangement about the terms to be paid for from Mr. S. until we have seen it. Send it to the office.

"Mr. Henry Wilkinson."—The composition of coumarine is C₁₀ H₆ O₄.

It was originally procured only from the tonquin bean, but is now known to be contained in various other productions of the vegetable world. Thus it is found in the plant called waldmeister by the Germans, and which they employ as a constituent in the preparation called maitrank. To prepare coumarine tonquin beans are digested with alcohol, and the alcoholic liquor, submitted to distillation, yields a syrupy liquid, which, on cooling, assumes a crystalline appearance. This being dissolved in boiling water, decolorized by animal charcoal, filtered, and evaporated, leaves as a residue crystals of coumarine. Coumarine fuses, and indeed boils, without undergoing any alteration. Its odour is aromatic and agreeable, but its vapours exercise an energetic action upon the brain. It dissolves in the cold in nitric acid of commerce, and the solution, being diluted with water, yields a cheesy matter, results which, when dissolved in boiling alcohol, deposits, on cooling, small crystalline needles of nitrocoumarine.

"Is the Koh-i-noor a Diamond?"—We have no doubt it is a diamond of large size, and of moderate translucency or water, but so badly cut that its lustre is inferior to that of a dozen diamonds at least, that our correspondent may see any day in the course of a ramble down Regent-street. The diamonds of most Oriental potentates have been remarkably ill cut; indeed, the art of diamond-cutting is almost too difficult for the capabilities of a half-civilized people. The most celebrated diamond-cutting establishment in the world is at Amsterdam. The machinery is rude but effectual, and the operators Jews, often exceedingly poor, have never yet been known to lose a jewel committed to their charge.

"Mr. M'lowell."—We know of no such publication. You had better consult "The Bibliotheca Britannica," which probably would give you the information you require.

"Mr. Henslow, Manchester."—You are mistaken. The orange does not flourish so far north in France as you imagine; even at Marseilles its growth is very stunted, and the seasons are few in which it arrives at perfection. The great locality of manufacture in France for odorous preparations of the orange, &c., is Grasse, near Nice. The Spanish olive oil is simply not so good as the Italian on account of the careless manner of procuring it.

"An Assistant, Shrewsbury."—Our advice is that you remain in the country until the Great Exhibition is closed, except, indeed, you visit London for the purpose of seeing it. If your object be to obtain an assistant's situation we counsel you that business is very flat in the metropolis at this time, and you would be less likely to succeed than a few months later.

"Inquisitor."—We believe that chlorate of potash is now entirely disused in the manufacture of percussion caps, on account of the corrosive nature of the results of its combustion on the nipple of the gun. Fulminating mercury is the substitute, not usually employed alone, but ground up with some diluting agent, usually, we believe, gunpowder. The greater quantity of fulminating mercury is made in the Channel Islands, and imported into England in linen bags packed wet in hampers. Fulminating mercury pays an import ad valorem duty of 35 per cent., but the cheapness of alcohol in the Channel Islands counterbalances this heavy item. Nevertheless, a considerable amount of fulminating mercury is prepared in England, the greatest quantity in Birmingham; and we have heard various speculations as to the peculiar ways the English manufacturers have recourse to in order to cheapen the price of the alcohol which they employ. From what we learn, the English manufacture is on the increase, owing to a new regulation of the Guernsey legal authorities imposing the island duty of 1s. per gallon on a cask for Guernsey consumption on all alcohol employed in the manufacture of fulminate of, or fulminating, mercury. The Messrs. Joyce, we believe, obtain their fulminate exclusively from Mr. Taylor, of Guernsey.

"Surgeon D. artist" suggests that we should furnish a series of articles on this important branch of practice so often combined with the business of chemist and druggist. We purpose availing ourselves of the suggestion, and will give due notice before the commencement of the articles.

"New World."—We would not advise a chemist and druggist to think of advancing his fortunes by proceeding to South Australia. It is almost purely an agricultural country, exceedingly salubrious, and hence unfavourable to that branch of the druggist's business which is connected with dispensing prescriptions.

"A City Drug Broker" who offers us information is thanked. We shall be always glad to receive contributions from any quarter, and those which suit us will be liberally paid for; our determination being to make the CHEMICAL RECORD AND DRUG PRICE CURRENT every way worthy of its double title.

"Mr. M'Farlane."—Send us a specimen of your proposed contributions. You omitted to give your address, otherwise we should have sent a private note.

Letters have been received from Professor Brande; D. H. Noad; Messrs. Birkett, Norwich; E. H. Paul, 20, Great Marlborough-street; E. H. Durden; O. R. Tomlinson, Lincoln; H. M. Dempsey; J. J. Flower; George Corney; all of whom are sincerely thanked for their suggestions.

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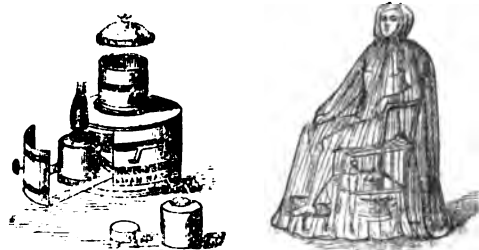
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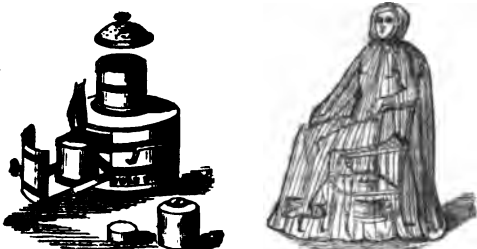
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Whole-world Policies are granted to persons assuring the lives of others on payment of an extra rate.

No admission or entrance fee required, nor any charge made for the Policy beyond the amount of the stamp.

Parties desirous of discontinuing the payment of their Annual Premiums may dispose of their Policies to the Company, for a sum of money payable immediately; or, on surrendering them, may obtain a new Policy, without any further Annual Premium, for a sum to be agreed upon, payable at the death of the life assured. The person to whom such new Policy is granted may be entitled, in respect of it, to participate or not in the profits to be periodically distributed.

Persons Assured for Life to the amount of £200, and who have been so for a period of twelve months, have the privilege of voting in the election of two of the Auditors.

Every facility afforded to persons assuring the lives of others, in order to render such Policies effectual securities.

Claims paid three months after satisfactory proof of death, or earlier, upon rebate of interest until the specified time of payment.

The Company purchases contingent or reversionary Property, grants immediate Survivorships and deferred Annuities, endows Widows and Children, and undertakes all risks contingent upon the duration of life.

Policies which have lapsed for non-payment of Premiums renewed upon payment of a fine; satisfactory proof being given respecting the health of the party.

H. D. DAVENPORT, Secretary.

ORIGINAL SERIES.

ON THE MANUFACTURE OF GLASS.
By M. REGNAULT.

The blowpipe, or *canne*, as it is called in France, is the
Fig. 3.



principal tool used in the manufacture of glass. It consists of a tube 1^m.50 in length, pierced with a hole about three millimetres* in diameter. It is furnished externally, on the extremity opposite to that destined to be plunged into melted metal, with a small tube of wood, *cd*, 35 centimetres in length, and which, by covering the iron, prevents the workman's hands from suffering by the heat.

At the extremity of each bridge marked *L* in Fig. 2, page 52, and supported by a suitable framework, is a plate of iron, called *marber*, in English *marber*, on which the workman rolls the pasty mass of glass, as is represented in Fig. 4, until it acquires a cylindrical form.

Fig. 4.



Near to the *marber* is a block of wood furnished with numerous hemispherical or pyriform cavities maintained in a constant state of mois-

ture. The blowpipe, or *canne*, being heated by insertion through an aperture in the furnace made on purpose, the workman's assistant plunges one end of it into the melted glass—of which he collects a certain quantity—retires, turning round his blowpipe all the time to prevent the glass from separating. He now dips it once more into the fused mass, of which he collects a further quantity, and, this being done, he hands the blowpipe to the master workman, who, seizing it in his right hand, strikes its end with melted glass attached on the iron plate, never ceasing to turn the blowpipe round, plunges it once more into the crucible, collects still more melted glass, and then, proceeding rapidly to his iron platform or *marber*, he lays on it his collection of pasty glass, which he turns round and round, and dips it into the semicircular or pyriform depression containing water of which mention was now just made. He next pushes the melted glass well towards the extremity of the blowpipe by means of an instrument, of which this is a representation, rolls it again on the *marber*, dips it into the wet pyriform cavity already spoken of, and then carries it to the furnace, when, plunging it through an aperture, he exposes it to heat until it assumes a convenient degree of pastiness to admit of the operation of blowing.

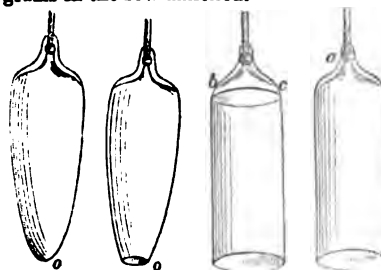
When, according to the workman's judgment, the proper degree of pastiness has been acquired, he withdraws the blowpipe, and recommences the same manipulation in the pyriform apertures, as already described; but at this stage of the operation he simultaneously blows through the tube in such a manner as to give the glass the form of a globe about three decimetres† in diameter, as is represented in the accompanying figure.



He now rapidly flings the bulb up into the air, and, rising it above his head, he blows in an ascending direction. The natural result of this operation is a flattening of the bulb just blown, the part most dis-



tant from the blowpipe attachment sinking down in virtue of its own weight, as is represented by the accompanying diagram. Then, by lowering rapidly the blowpipe, the bubble of glass is now made to assume the second form. The workman now causes the blowpipe to describe a curved line, by swinging it to and fro after the manner of the pendulum of a clock. From time to time, whilst this curved motion is taking place, the workman blows down into the bubble of pasty glass, and the result is, that, what with the force of the breath and the effect of the swinging, the glass bubble elongates, until it ultimately yields the cylindrical figure represented by the third and fourth diagrams in the row annexed.



It is absolutely necessary that the workman keep the bulb in continuous motion, in order to prevent its shape from becoming irregular; and the occurrence is most rare for a cylinder of

the desired size to be obtained by one operation of expansion; more frequently this is only the result of many blowings and meltings interposed.

When the cylinder has been made of the desired size its extremity is again caused to approach the flame, until it acquires a very high temperature, when the operator by blowing violently causes the glass to burst, and an aperture to ensue. Sometimes, however, this operation is effected by the following method:—An assistant attaches a large mass of melted glass to the extremity of the cylinder, which consequently becomes softened just at the point; when the workman, blowing with great violence, as in the previous case, causes the glass to be ruptured and an aperture to be the result. Immediately this aperture has been effected, the workman removes the cylinder from the furnace, and his assistant, by means of a pair of shears, cuts off its dome so as to lay it entirely open, as in the second figure of the preceding views. The workman now spins round the blowpipe with great rapidity, which causes the aperture to be still more enlarged, and the cylindrical form to result. He now cools the glass by having recourse to the pendulum motion as before; and, as soon as it has become solid, an assistant, by touching it with a rod dipped in cold water at the point where the blowpipe joined the glass, causes separation to take place between the two.

The cylinder now, it must be remembered, is closed at one end, and open at the other; hence, inasmuch as it is desired to make it into a square plate, the other end must be opened also. This is accomplished by the following ingenious process:—The cylinder, being laid horizontally, as indicated, is surrounded with a string of fused glass, at the point *bc* in Fig. 4 of the preceding diagram, and this sudden application of heat immediately produces fracture in the required direction.

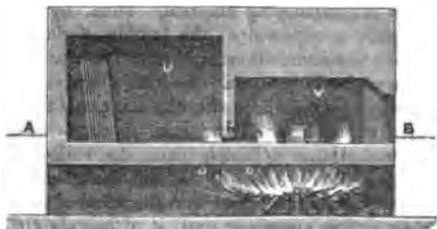
The *manchons* of glass, as they are called, are now carried to a furnace composed, as represented by the accompanying diagram, of two chambers, only separated by a slight brick wall.—(See diagram next page.)

At the lower part of this wall there is situated an opening of one metre* in width, by only a few centimetres in height.

* A millimetre is = 0.393 parts of an inch.
† A decimetre is = 3.9371 inches.

* A metre is = 39.3710 inches.

This hole or slit serves for the passage of the glass plates, after they have been made in compartments V, in a manner



presently to be described. It is in this compartment V that they are allowed to cool very gradually—a process termed annealing. A fireplace, situated below these chambers, as represented in the diagram, communicates the necessary degree of heat to both. The temperature of V ought to be far more violent than that of U.



The cylinders are converted into plate by the following method:—Being placed horizontally upon a table, a drop of water is drawn along the upper part of their surface, in a straight line, from *d* to *e*, as follows:—



And, a piece of red-hot iron being rapidly made to follow the water track, a fracture immediately results. The cylinders are now, one after the other, pushed into the aperture O of the diagram last but one, and gradually thrust forward on guide-rods, represented above—into the hottest part of the furnace. As the cylinders gradually present themselves over the flattening table V, the workman catches them by an iron rod, and lays them on the table, which is sometimes made of cast iron, and at other times of a thick mass of glass covered with a layer of plaster in order to prevent adherence.

Being at length on the table, the method of converting the cylinder into a plate of glass will be easily comprehensible. It is now soft as wax, so that the workman, by means of an iron rod, easily lays it flat, thus:—



In some manufactories, however, instead of this rod, an instrument of alder-wood, shaped as in this figure, is employed. Alder-wood carbonizes very slowly, and does not blister or throw off sparks,—hence its propriety of use for the purpose of flattening the cylinders. The sheet of glass now

made is pushed through the slit which divides the two compartments of the furnace into the second or apartment of lower temperature, where a workman, gently inserting a flattened fork of iron, lifts up the glass, now sufficiently solidified not to bend, and places it upright against a bar of iron which is made to traverse the whole breadth of the furnace. Sheet after sheet is successively laid against the same bar, until it affords space for no more, when another bar is set up and furnished with glass plates as before; and the operation of alternating bars and sheets is continued until the annealing furnace becomes quite full. The temperature is now gradually lowered, the furnace is unpacked, and the sheets of glass delivered into commercial channels.

By the operation of glass-working now described are not only formed sheets of glass, but also clock and flower shades, goblets, vases, and innumerable other forms.

An inferior quality of glass used for common glazing purposes, chemists' phials, &c., is made of less pure materials, and is usually coloured more or less green, by the presence of a little protoxide of iron. Cast or plate glass as manufactured in France is formed out of a material having a double base of soda and lime. The oxygen of the silicic acid is to that of the base in the ratio 6 to 7. The proportion of carbonate of soda, however, employed in forming plate glass is very much greater than employed in sheet glass, because a more complete fluidity is necessary to the successful prosecution of the casting.

In the Gobelins Factory, which is the most important one in France, the mixture is prepared with

300	parts white quartzose sand,
100	„ dry carbonate of soda,
43	„ slaked lime,
300	„ broken glass.

The greatest possible care is taken in the choice of materials and in their purification, for it is essential to obtain a glass of the least possible amount of colorization. The fusing furnace is very analogous with that already described for making sheet glass, but wood is invariably the material employed for fuel. All the materials pass successively through two crucibles. Into the first, which has a conical shape, the workman projects the glass-making material by small portions at a time, until the crucible is almost full. He then submits the next to fusion for a period of fifteen or sixteen hours, during which time the glass refines itself. Workmen now, by means of copper ladles, dip out the fused material and pour it into smaller crucibles, called *cuvettes*. These are placed in the furnace on the same support as the fusing crucibles. When the transference of material has been completed, the orifices of the furnace are closed up, and, the heat being urged, the glass is brought to a great state of liquidity. The *cuvettes* are now removed by the aid of a particular apparatus, and are swung or suspended over a flat table of bronze, previously heated. The fluid glass is thrown upon the table, where it is subjected to the action of a powerful roller, and thus brought to the condition of plate. The plate being made, it has to be annealed, and afterwards polished, for all plate glass at this stage has a rough, harsh surface. The grinding and polishing operation is thus conducted:—The plate being firmly imbedded on a table, by means of plaster of Paris, and a smaller piece of glass being superimposed, quartzose sand is strewed between, and the two maintained in continuous friction by means of machinery. This operation

of grinding thus described merely gives the plate a flat surface but one that is rough, the polish is obtained by rubbing it first with emery, and finally with colcothar made into a paste with water.

Chemical Record

AND

DRUG PRICE CURRENT.

SATURDAY, AUGUST 9, 1851.

POSITION, PROSPECTS, AND FUNCTIONS OF THE PHARMACEUTICAL SOCIETY.

As the Pharmaceutical Bill is withdrawn for the session, we may seem to be rather out of time in our remarks; but, seeing that it will in all probability be reintroduced, and with a very fair chance of passing in some shape or other, we wish to put upon record our opinion as to its merits.

Supposing the general question of the desirability of legislating at all upon the subject to be settled in the affirmative, there are two points in the present bill which especially deserve to be borne in mind. The first is, that it proposes to make the Pharmaceutical Society an examining and licensing body, with exclusive powers. The second is, that no *rights* are recognised except those of the society's members, or others claiming to be registered as *already exercising the business*.

On the first point we would observe that the society has taken its stand as an *educating body*; that it has done so having in view the fact that it is opposed to all precedent to permit such a body to examine and license its own *alumni*; and that it has founded its appeal to the profession for membership on the ground that it expressly disclaimed all examining pretensions. For proof of this we need only refer to the leading articles of its own "Journal." An attempt was there made, some time since, to draw a parallel between the present circumstances of the society, and the past history of the London University. The latter was originally an educating body, and, when a University having power to examine and confer degrees was demanded, the original body, retaining its proper functions, took another name (University College); and the University itself was constituted altogether *independent of the Colleges* affiliated with it.

Now, we are ready to admit the justice of this comparison; the cases appear to us to be analogous. Without undertaking to affirm that the Pharmaceutical Society is not adapted to exercise the functions of an examining and literary board, we may say that it has not as yet *established*, simply, because it has not yet put forth, a claim to that position. We are aware that the *council*, representing chiefly the London druggists, have urged the members to petition in favour of Mr. Bell's bill; but the subscribers at large have never been polled upon the question—"Shall the society, in its corporate capacity, assert a claim to become a licensing body?"

Still less has the *whole trade* been canvassed as to its confidence in the council thus acting for them, or as to its general satisfaction with the constitution and past management of its society.

It is useless to conceal, as it is a fact well known, that there would be numerous dissentients on both points. Many are of opinion that the council represents too exclusively the *aristocracy* of the trade; while the conditions of election render it difficult for any but the London druggists to secure representation; others object to the *constitution* of the society, as stereotyped in the charter, about the provisions of which those who subscribed the greater part of the funds were never consulted; many who receive no direct benefit, except reading the "Journal," think the benefit dearly purchased by a heavy annual subscription, and consider themselves entitled to recognition in their calling without being taxed towards the expenses of museum, laboratory, lectures, and soirées, in Bloomsbury-square. The assistant who *cannot* attend lectures thinks it not fair that he should have to pay an equal subscription with the assistant who can; or he thinks, perhaps, that the certificate should be charged for once for all—and there the matter end—and that he who has no voice in the management of the society and the disposal of its funds should not be permanently taxed for its advantage.

Now, we have our own opinion as to the real value of these several objections. We know that many hold them; but supposing them to be vain, and those who put them forth not entitled to be heard—supposing the constitution of the society to be everything that is desired, and its management above suspicion—we have still to deal with the fact that the society is itself a professed trainer of students in pharmacy, and that it would thus become the examiner of its own pupils equally with those of other schools or private teachers, with which it is a competing party. In any such arrangement we think the other parties would have a just ground of complaint. The council of the Pharmaceutical Society would, subject to the provisions of the charter and the bill (both drawn up at their own instance), have the affairs of the whole trade in their hands; a committee, composed mainly of West-end London residents, would determine the price to be paid for registration, having themselves a direct interest in the amount, and the free disposal of the fund in their own locality; and the country trade be taxed to maintain a school in competition with themselves as teachers of apprentices in their art.

It may be alleged that they possess neither the ability nor the means to train efficiently in scientific studies. But, if the stimulus of examination and recognition were supplied, schools of pharmacy would undoubtedly arise in our principal towns; and members of the trade would feel a greater interest in sustaining an institution in their own locality, and subject to their own control, than in subscribing to a distant society which drew young men away from them to study in London. Not to add that among the country trade such an arrangement would open up a field for talent and call forth lecturers and examiners from the body, thus powerfully stimulating the desire for general scientific education among them.

Of course, even with a free system of competition, the Bloomsbury school would naturally be pre-eminent, and obtain the lion's share of patronage; but it would do so by the superiority which competition would promote, and not by a quasi monopoly, sustained by enforced subscriptions, and the repression of private enterprise.

We counsel our readers to consider which course would be most for the benefit of the public, the trade, and the future working of the society itself.

The other point we must reserve for our next.

THE VEGETARIANS AND THEIR FALLACIES.

SEEMING that our efforts, moral no less than physical, often fall short of their desired goal—he who would successfully reform abuse should throw his whole energy into the cause, and, aiming far beyond the mark proposed, should let his shafts fly high.

Whatever amount of ridicule may be cast, by the shallow and unthinking, on the manifestation of exaggerated effort, this to minds reflective and well informed will only be estimated as a creditable display of power; and although a stern unbending will—a soul consecrated to one idea—alive to its proposed destiny—dead to all besides—may not in the aggregate present us with the attributes of a well-balanced mind, these qualities will nevertheless invoke our admiration, and claim our respect. Although not constituting a perfect man, they are elements which advance the perfectibility of mankind.

Possessing these sentiments,—and they are indeed unfeigned,—it would be more than inconsistent for us to undervalue the spirit of enthusiasm. On the contrary, when really arrayed against abuses, we admire its bravery; and, if these abuses are cherished by the vices, the prejudices, or interests of mankind, we reverence its unselfishness. But, whilst admitting that most things worthy of achievement have been achieved by enthusiasm, we are not blind to the fact that instances now and then occur when enthusiasm goes wild—and, assuming the guise of a pure and holy spirit, lends her powerful advocacy to measures which are essentially bad. These remarks are evoked by the recent doings of certain enthusiastic individuals who call themselves vegetarians; men and women who think not only to improve their own constitutions, but to reform the world, to root out disease from man's physical organization, and to improve the structure of his mind, by the abandonment of all animal food in favour of vegetable growths.

Not only have these philosophers demonstrated most completely to their own satisfaction that an animal alimentation is conducive to disease; not only have they demolished all evidence, anatomical and physiological, hitherto adduced in favour of the carnivorous tendencies of man; but, giving full wing to their enthusiasm, they have set aside precedent human instinct, science—ay, even holy writ—and have determined, by a chain of logical sequences, altogether satisfactory to themselves, that animal food is not now, nor never has been, the proper food of man. An indisputable connection is demonstrated to exist between scrofula and pork; fevers are traced to blood-eating; consumption to the ingestion of fat; and, worse than all, there appears no reason to doubt, according to these illuminati, that a most intimate connection exists between rump-steaks and war. He who hesitates not to knock an ox on the head—will not hesitate, it is averred, to kill a man; hence, were there no butchers there would be no war. Q. E. D.

Now, as we have no time to dispute with the Nebuchadnezzars of modern times on each several clause of their doctrine—we can only afford to say, that the parallel just

sought to be established could only hold good under the supposition that warriors kill people for food; and, therefore, however applicable to cannibal nations, can by no means apply to ourselves. We cite the proposition for the purpose of indicating how unsatisfactory is the tie between its premises and its conclusion; nor do we consider the vegetarians to be more felicitous in establishing their next grand proposition—that man evidently was not intended to eat meat, because it is repulsive before the application of fire. Notwithstanding all their love of vegetables, we venture to assert that they would make very wry faces over a dish of raw cabbage or carrots. Paddy, we opine, notwithstanding use and early training, would look very much askew at the prospect of raw potatoes; nor would Sawney greatly excel in the mastication of uncooked oats. To us, then, the chain of reasoning appears fallacious from end to end.

But hold! Notices of a vegetarian supper party meet our view; and amongst the chronicled viands there displayed we read of blancmanges, trifles, syllabubs, and other learned combinations of eggs, milk, and cream! This is no more nor less than an arrant piece of cheating; the vegetarians, false to their principles, have deceived themselves. To be consistent with their own principles, they ought not to have eaten animalized substances at all, neither should they have availed themselves of the cooking agencies of fire.

We admire the teetotallers for their consistency; they repudiate alcohol in any form; and, however much we differ from them in doctrine as physiologists, still, morally considered, we cheerfully acknowledge their enthusiasm to have been productive of infinite good. Moderate ingestion of alcoholic drinks we believe to be good and salutary; but drunkenness we hold to be the most degrading of all crimes, and we, therefore, reverence teetotallers as sacrifices in vindication of the principles of alcoholic moderation.

As for the vegetarians, they were neither called for nor wanted: no vice parallel with drunkenness invoked their inauguration—no advantage, present or prospective, vindicates the doctrines they advance. Their opinions were begotten out of a fallacy—are maintained by trimming, compromise, and fraud. Thinking men will discard their notions with the ridicule they merit; but unthinking ones who may chance to adopt their silly crotchets, and imbibe their sloppy soups, stand a very good chance of falling victims to cholera; against which it behoves all who can—to fortify their constitutions by a sufficient quantity of good animal food.

As for the enthusiasts themselves, we would have the Board of Health make them vindicate their principles, by submitting to a strict uncooked vegetarian diet. Cholera would soon rid the world of these heretics.

REVIEW.

A Translation of the New London Pharmacopœia, including also the New Dublin and Edinburgh Pharmacopœias, with a Full Account of the Chemical and Medicinal Properties of their Contents; forming a complete Materia Medica. By J. Birkbeck Nevins, M.D. Lond., M.R.C.S. and L.A.C., &c.

(MERCURY concluded from page 60).

"Symptoms of mercurialism.—Of these, the most decided is the profuse flow of saliva, which is poured out in such quantity that it runs involuntarily from the mouth, and the patient is quite incapable of preventing its discharge. The

first symptom is generally a red line in the gums at the line of junction with the teeth; they are tender, and, if roughly pressed, sometimes bleed. About the same time the breath acquires a peculiar and very offensive fœtor, characterized as *mercurial*, and the patient has a disagreeable metallic taste, often described as resembling that of a halfpenny in the mouth. As the case advances, the gums and inside of the cheeks and lips, and the tongue, become much swollen and ulcerated; the latter being sometimes so large as to be constantly protruded from the mouth; the flow of saliva is incessant; the salivary glands are enlarged and painful, and hence the neck is swollen and tender; and the teeth ache and become loose, though it is exceedingly rare for them to drop out. It occasionally happens that, after mercury has been exhibited for some time, even without producing salivation, the pulse becomes unusually quick, and continues for some time after the discontinuance of the medicine. It is necessary to bear this in mind, lest the mercury should be continued too long, under the idea of some inflammatory action still proceeding and requiring the medicine for its suppression.

"Salivation produced by other causes.—Salivation sometimes occurs spontaneously in the course of a catarrh, and is sometimes produced without any evident cause. A case was in Guy's Hospital six or seven years since in which every symptom so closely resembled those of mercurial salivation, that it was only from observing the obstinate duration of the affection that the patient's assertion was believed, that he had not taken any mercury. Several medicines which do not generally act in this way occasionally induce salivation. Of these, the most common are iodide of potassium, iodine, chlorine, and bromine, spirit of nitric ether, prussic acid, hyoscyamus, belladonna, digitalis, trinitrate of bismuth, and arsenious acid. Tartar-emetic, and some of the compounds of lead and copper, cantharides, and sulphur, opium, nuxvomica, and even ipecacuanha, in the form of Dover's powder, have produced it; and it is quite possible that other substances may sometimes act in the same way.

"Treatment of profuse salivation.—The first part must be to suspend the administration of the mercury. The patient should be warmly clothed, and take exercise where he may be exposed to a current of dry air, without being chilled. The diet should be light and nourishing; but solid food can seldom be taken. A brisk saline purgative is occasionally of use, and Christison has found benefit from the employment of nauseating doses of tartar-emetic, or of ten-grain doses of acetate of lead, three times daily, as recommended by Daniell. As local applications, gargles of alum, catechu, or borax and honey, brandy and salt, or other stimulant astringents, are in general use. Christison has seen the most benefit obtained by a lotion of one part of chloride of lime in one hundred parts of water. I have seen great relief speedily follow the light application of strong hydrochloric acid, by means of a sponge brushed quickly over the gums and inside of the cheeks, as recommended by Mr. Busk. The application scarcely gives pain.

"Detection of mercury in the saliva.—Whilst some chemists have detected a minute portion in the saliva of salivated patients, most have failed to discover any. The quantity must, therefore, be exceedingly small.

"Antisyphilitic.—It is remarkable that, after possessing the almost unlimited confidence of surgeons for some hundred years in the treatment of the various forms of this disease, the powers and value of mercury should have been so far called in question during the last few years as to have weakened the confidence of some, and destroyed that of others. The conclusions, however, which may be drawn from the facts disclosed during the controversy on this subject are the following:—

"1st. That every form of venereal disease has been and may be cured without the administration of any mercury.

"2nd. That, in some forms of syphilis, mercury is not only useless, but injurious, when given so as to affect the constitution.

"3rd. That in those cases in which it is admissible the good effects to be derived from it may be obtained from much smaller quantities than were formerly given.

"4th. That some of the symptoms and effects formerly attributed to this disease were due to the mercury itself.

"5th. That notwithstanding all the forms of syphilis may be cured without it, yet its judicious administration materially hastens the cure in many forms of the disease.

"6th. That the occurrence of secondary symptoms is much less liable to happen after the administration of this remedy, than if the disease has been cured without it.

"7th. That the liability to secondary symptoms is, in a great degree, dependent upon the length of time which the syphilitic virus has had for being absorbed into the system; and that, therefore, it becomes a point of primary importance to heal a venereal sore as quickly as possible; and, as this can generally be sooner effected with mercury than without it, its employment on this ground is most advisable (*Tuckett*).

"8th. That in those venereal sores characterized by slowness of progress, and the deposition of albumen or lymph (commonly called 'hard chancres'), the use of this remedy is almost essential: whilst in those characterized by rapidity of progress, and the absence of any barrier by the effusion of lymph, or those in which there is a tendency to rapid ulceration, it is, on the contrary, less beneficial, if not positively injurious.

"9th. That in the venereal eruptions of a papular or scaly form it is beneficial, whilst in those of an ulcerative character, as ecthyma or rupia, it is hurtful.

"10th. That its administration ought generally to be suspended when suppuration is taking place in a large bubo.

"11th. That the benefit derived from its use is not proportional to the amount of salivation induced; and that, except as an evidence of a constitutional effect, this result is undesirable.

"Antiphlogistic.—When mercury acts as a purgative it often causes considerable temporary depression, and some of its preparations occasion distressing nausea, but not vomiting. In acute inflammations it generally reduces the pulse, abates the pain and fever, and produces a favourable termination of the case. These effects are much promoted by the previous abstraction of blood; and are seldom noticed until some degree of salivation or tenderness of the gums is induced, showing that the system generally is under its influence; and its operation is often attended with a degree of perspiration.

"Sedative or contra-stimulant.—This term may be thought to be similar to the last; but the meaning here attached to it is essentially different. The effect here intended has been noticed in the operation of calomel only upon diseased alimentary mucous membrane, and has been chiefly observed by practitioners in the East, who find that in dysentery large doses of calomel (℞j, several times daily) allay the pain, tenesmus, and general irritation, instead of exciting or increasing them as is usually the case in the diseases of this country, and as is always the case if the mucous membrane is not previously in an unhealthy state.

"Resolvent or liquefacient.—This is a most valuable property of the mercurial preparations, in which they stand almost alone. Under their continued use, various new or recent formations gradually disappear, and this even if they have become organized; and some inorganic deposits, as well as old and natural structures, are also removed under their influence. As an example of the first of these may be mentioned the absorption of the lymph deposited upon the iris, in iritis, which may be seen to disappear from day to day, as the employment of the remedy is continued. The absorption of the fluid contents of some buboes and other enlarged glands, and of the effusion into the pleura and pericardium in inflammation of these tissues, is evidence of the second statement; whilst the absorption of the alveolar processes, and of the cranial and other bones, formerly attributed to the action of the venereal virus, but undoubtedly capable of being occasioned by mercury, furnishes examples of the last.

"Under the continued use of mercury, the quantity of albumen in the blood diminishes, and the proportion of serum increases. Albumen and fibrine are, chemically, almost identical, and it is not, therefore, surprising that the further deposition of fibrine in inflammations should be checked by the administration of mercury; and that the

Strine recently deposited should be reabsorbed more or less completely.

"Achalasia.—Calomel is frequently employed to expel ascariides, but it is doubtful whether it acts otherwise than as a simple purgative. It is not the less valuable on that account.

"Diuretic.—Mercury can scarcely be called a diuretic when administered alone, but it promotes the action of many remedies of this class. Hence it is common to combine blue pill with squills or digitalis; and, in some cases, the good effects are not perceived until the system is brought under its influence.

"Diaphoretic.—Mercury would never be administered alone as a diaphoretic, but some of its compounds, when combined with other remedies, produce some degree of perspiration. The bichloride acts more decidedly in this way than any of the other preparations of this metal.

"Effects of external application:—

"Corrosive.—When bichloride or nitrate of mercury come in contact with a mucous membrane, or with any tissue undefended by cuticle, they act like caustics, and destroy the tissue, producing a slough, and subsequently an ulcer, as is strikingly shown in cases of poisoning by corrosive sublimate. When the binoxide is sprinkled upon an ulcer it excites acute pain, and destroys the granulations; whilst, if more moderately applied, it acts only as a healthy stimulant.

"Errhant.—This is seen when almost any compound of mercury is brought in contact with a mucous membrane or an open sore.

"Errhine.—This is dependent upon the last-named property. The subsulphate of mercury was formerly used as an errhine, but is not now employed, and is not contained in the Pharmacopœia.

"Production of the peculiar constitutional influence of mercury.—All the constitutional effects of this substance may be obtained by the external application of some of its compounds, and, in some cases, this is the best way of introducing it. (See UNGUENTUM HYDRARGYRI.)

"Bad consequences sometimes caused by mercury:—

"Profuse salivation (see *Medicinal Properties of Mercury*, sect. *Stomatogogue*, p. 424); *profusa diarrhœa*; *mercurial erethism*; *violent sweating*; *æzema mercuriale*; *mercurial iritis* and *periostitis with nodes*. It is very doubtful whether some of these are not caused by other agents than the mercury, as they only occur when this mineral has been given for the cure of some form of syphilis. Severe ulceration and sloughing, *mercurial palsy*, and *general cachexia*, are undoubtedly sometimes caused by mercurials.

"Symptoms of the mercurial erethism.—Gradually increasing paleness; inquietude, and frequent sighing; respiration more frequent, with, sometimes, oppression in the chest and anxiety about the præcordia; irregular action of the heart; weak, frequent, and irregular pulse; sometimes vomiting, though the tongue is seldom furred. When these symptoms are present, any sudden or violent exertion sometimes occasions sudden death. The medicine ought, with these symptoms, to be immediately suspended.

"Absorption of mercury.—Though many of its compounds are insoluble, there is sufficient evidence to prove that it is absorbed into the system. Christison has collected the following from various sources:—

"1st. Mercury has been detected in the blood by several chemists, though it requires destructive distillation to make its presence recognised by the usual tests.

"2nd. It has been found after death in the bones, brain, synovial tissues, humours of the eye, and lungs.

"3rd. After the use of sulphur, a course of mercury has caused blackness of the skin, from the formation there of sulphuret of the metal. It has also been found in the perspiration, saliva, bile, and urine.

"Uses.—The diseases in which mercurial preparations are generally used are the following:—

"Acute inflammations of serous membranes are more benefited by it than those of mucous membranes, in which it is generally injurious rather than useful. Thus, in pleurisy, peritonitis, arachnitis, pericarditis, it produces good results; whilst in enteritis and bronchitis it is less beneficial, though even in

these its moderate employment is not to be disregarded. In *roup*, which is an affection of a mucous membrane, it is given very largely and at short intervals, as the progress of the disease is so rapid that all treatment must be prompt which is to do any good. In *acute dysentery* of eastern countries calomel is given in very large doses, and with decided benefit. (See *Sedative Effects of Mercury*, p. 427.)

"In *chronic hydrocephalus* it can only do harm if given so as to affect the constitution; but small doses (gr. j) of chloride of mercury, combined with an alkali, as bicarbonate of soda, and administered every night or every other night, in conjunction with liquor potassæ during the day, produces good effects in this intractable disease. It is often given in *chronic pericarditis*, in order to reduce the effusion, but it is not to be trusted to alone in this affection; and though very serviceable in the *first stage of pleurisy*, yet it does little good in the chronic stage of hydrothorax. *Synovitis* and *conjunctivitis*, which hold an intermediate place, are less benefited than the affections of purely serous membranes; but the importance of active treatment in the latter sometimes leads to its employment, when otherwise it would be better omitted. It is not often given alone for the cure of *scleroticitis*; but if conjoined with opium, Dover's powder, or colchicum, it is frequently of use, in moderate doses, as one or two grains, twice a day; and the occurrence of salivation is not injurious to the patient. Inflammation of parenchymatous structures, as in *pneumonia* and acute inflammation of the liver, requires its early and active administration; as do also acute *testitis* and *chronic enlargement* of the testicle, dependent upon venereal causes. In *syphilitic tritis*, or *iritis dependent upon an injury*, it must be given rapidly, so as to produce an effect as quickly as possible; and its employment should be continued until the whole of the deposited lymph has been reabsorbed. In *gouty* or *arthritic iritis* it is generally prejudicial.

"Fever.—In continued fever the employment of mercury is not only often admissible, but is of much service. It improves the secretions, and it is found that, when the system can be got under its influence, the patient generally recovers. Even in those cases in which there is some gastrointestinal irritation, it is not entirely to be avoided: for the removal, by its means, of the irritating contents of the bowels produces more relief than itself does harm, and the irritation which it produces in fever is not always so great as that which it excites during health. Some physicians prefer introducing it by means of inunction, a portion of mercurial ointment being placed in the axilla, where it is gradually absorbed.

"Dropsies.—In acute *ascites* dependent upon cold or inflammation it will be beneficial; but, when dependent upon organic disease of the liver, it cannot do any good. In most cases it aids the operation of diuretics, and is therefore given; but it is almost always *prejudicial in dropsy accompanied with the secretion of albuminous urine*. In *chronic synovitis* it is often of use, both given internally, and applied externally, in the form of ceratum hydrargyri compositum. In *dropsy of the anterior chamber of the eye* it is useful; but it seldom does any good in hydrocele. In *hydrothorax*, *hydrocephalus*, and *hydropéricarditis* it sometimes does good, but the benefit derived from it is generally small in proportion to the length of time the disease has existed.

"Syphilis.—The forms of this disease most benefited by it are the *indurated chancre*, and *papular* and *scaly secondary eruptions*. It should be given until the whole of the induration has disappeared. It is useful in nearly every form of venereal sore; but if the ulcer is treated immediately upon its appearance with caustic, and is healed at once, its administration is not generally necessary, though it ought to be given whenever any hardness is present. It is *decidedly prejudicial in phagedenic ulceration*; and in *ecthyma* and *rupia* its internal administration is *hurtful*, though the sores may be beneficially dressed with the unguentum hydrargyri nitrico-oxydi. There is scarcely any form of venereal sore which may not be treated with black wash externally. *Indurated buboes* sometimes disappear under the use of mercury; but it is injurious when they have begun to suppurate. *Gonorrhœa* is not generally benefited by it; but a gleet may

be dependent upon a syphilitic sore in the urethra, and is sometimes cured by the administration of mercury, when all other means have failed.

"*Nodæ, both solid and fluid, and scrotois dependent upon pericestitis, are often removed by a course of mercury.*"

"*Cases in which mercury is objectionable.*—*Scrofulous patients generally suffer from any of its forms, except the iodide and biniodide; but, as its employment may be necessary, it should be remembered that it must be used with caution; that a smaller quantity will suffice than in other cases; and that its administration should be discontinued as soon as possible.*"

"*Albuminaria, or dropsy with the secretion of albuminous urine, is almost always made worse by its employment.*"

"*Doses.*—For the doses, see the particular preparations.

"*Administration.*—See the particular preparations.

"*Official preparations.*—Hydrarg. cum Cret. *L.D.E.*; cum Magnes. *D.* Hydrarg. Chlor. *L.D.E.* Hydrarg. Bichlor. *L.D.E.* Hydrarg. Am.-chlor. *L.D.E.* Hydrarg. Nitricooxyd. *L.D.E.* Hydrarg. Iodid. *L.D.E.* Hydrarg. Biniodid. *D.E.* Hydrarg. Bisulphuret. *L.D.E.* Liq. Hydrarg. Pernitratiss. *D.* Hydrarg. Sulphas. *D.* Liq. Hydrarg. et Arsen. Hydriodatis. *D.*"

A Manual of Botany. By John Hutton Balfour, M.D., F.R.S.E., Professor of Botany in the University of Edinburgh. Second Edition. London: J. J. Griffin and Co. *Singular Specimens of the Edinburgh Practice of Criticism.* By John Joseph Griffin. London: Griffin and Co.

The first of these publications is the second edition of a manual which, notwithstanding its existence dates but from 1849, has met with so general acceptance that it is unnecessary formally to introduce it to the public. What we shall have to say of it concerns principally the relation it bears to the second subject of our review, the pamphlet of Mr. Griffin. This gentleman, who, perhaps, is better known even than Professor Balfour by his literary and commercial exertions to remove barriers which, until lately, excluded thousands from the pursuit of chemistry, is a publisher, and finds himself placed in the strange position before the public of being opposed as a bookseller by the very man whom he has paid as an author. Hence his pamphlet, which is an appeal to the public, according to the title, against the verdict of two Scottish reviews, but in reality against the endeavours which he considers Professor Balfour is making to injure his character and literary property. Under ordinary circumstances this protest against the sentence of a review would not have demanded notice, most likely would not have been written. It is common enough for publishers to be dissatisfied with the verdict of public organs, and pamphlets in reply and vindications are by no means rare. There may now and then be injustice committed towards a book by undue censure, or towards the public by ill-considered and excessive laudation, but in ninety-nine cases out of a hundred the merits of new works are settled with a high degree of accuracy, the balance of justice to the bookseller is redressed, and the public derives large benefit. It is because Mr. Griffin asserts that this wholesome action of the press has in his case been interfered with, and that private pique and hopes disappointed have been allowed to put in motion agencies potent to influence the general mind, and because he brings strong evidence to make good his assertions, that we now say, let him be heard.

The first in this fasciculus of "Specimens" is a letter from the author to Professor Balfour, in which, for the purpose of making clear the wrong that has been done him, he recapitulates the history of the "Manual of Botany," the *font et origo* of so much mischief, and we shall follow the same chronological order in our extracts.

Mr. Griffin says:—

"In the year 1847 I formed the idea of publishing a series of cheap manuals on the natural sciences, and in looking about for literary assistance I applied to you thus:—

"Glasgow, Jan. 2, 1847.

"Dear Sir,—We have formed the idea of publishing translations of the following three French works:—"Cours Élémentaire d'Histoire Naturelle," 1st, Botanique, par M. A. De Jussieu; 2nd, Zoologie, par M. Milne Edwards; 3rd, Minéralogie et Géologie, par M. F. S. Bendant. The cuts first drew our attention; but we are told that the matter is also of good quality. Having entered into correspondence with the proprietors of the French works, we believe that we can procure casts of the cuts. We have now to find editors. Presuming that the volume on botany is known to you, we take the liberty to ask whether it would be agreeable to you to undertake its translation into English, either verbatim, or with such alterations as might be considered necessary to adapt the work for English readers. Perhaps, also, you can favour us with an opinion whether there is room for such a work in this country, that is to say, whether it would have many competitors of the same kind and quality. We put this query because we are not very well acquainted with botanical literature. We should mention that a part of our plan is to publish these books much below the common price of similar works. The cheap system has never yet been applied in this country to books on natural history, but we are inclined to venture a trial, keeping up, of course, the quality of the books as high as possible. Can you inform us where we might possibly find a translator for the volume on zoology? Has Dr. ——— leisure or inclination for pursuits of this kind? or do you think that Professor ——— or ——— could do it? We are, dear sir, yours truly,

"For Richard Griffin and Co.,

"JOHN J. GRIFFIN.

"To Prof. Balfour, Edinburgh."

"You replied:—

"Edinburgh, January 4, 1847.

"My dear Sir,—I have long intended to bring out a cheap text-book for students, and your proposal seems to me the means of accomplishing this object. The work to which you allude is well known to me, and can easily be adapted to the system pursued in Britain. In accepting the proposal I shall feel myself at liberty to make some modifications. In fact, I shall take the "Cours Élémentaire" as the groundwork, and upon it form my text-book. The great difficulty is in procuring woodcuts, and I am glad to think that you are likely to succeed in getting over it. I shall be glad to talk over matters with you, and, as I purpose to be in Glasgow for a few hours on Thursday next, I shall endeavour to call upon you in the afternoon, and make the arrangements necessary. ——— would be an excellent person to take up the zoology. I shall speak to him on the subject. If he does not consent, you should apply to ——— or ———.

"I am, yours sincerely,

"J. J. Griffin, Esq."

"J. H. BALFOUR."

Let the reader weigh carefully the language of this correspondence, and draw his own inference concerning what it proves was passing through the mind of each party. First of all, the first move was made by Mr. Griffin. It is the same with books as with grosser inventions: priority of expressed design gives a property in the potential product. The rule of honour which binds an author not to take advantage of the confidence which an enterprising and speculative publisher will often find occasion to place in him wants, indeed, any powerful external sanction; but it is clear enough in itself, and, let it be said, it is universally observed. According to this rule the "Manual" *in posse* was Messrs. Griffin's.

It is possible that the usages of the intercourse of authors and publishers may not prove a satisfactory argument to some. Perhaps there are those who would repudiate the commercial view which we have just stated, and say that the property in a literary design should rest in him who first conceived it. Referring to Professor Balfour's answer as given above, such an objector might point out that the professor "had long intended to bring out a cheap text-book for students," &c., while Mr. Griffin went no further than saying that he was at that time in possession of such

an idea. A little closer examination will show how important it is to keep close to the commercial principle of adjudging the proprietorship to the person who first makes his invention actually known. Let us but ask what was to be done, and what "ideas" either party had of doing it, and the difficulty clears off at once. A book was to be written and edited, its cuts engraved or bought, the edition printed, advertised, and conveyed to a thousand centres of trade. Mr. Griffin has an "idea," a full and complete, a working "idea," of all this. He says, the money to carry out the design is ready, the "matter of good quality" already exists; "we believe we can procure casts of the cuts—we have now to find editors." And now what was Dr. Balfour's "idea," what preparation had he made, and what did he perceive that he had to find? In his letter, written by return of post, he could boast of literally nothing, but an intention, a good intention no doubt; but one which, judging from its long sterility, would have remained unfruitful to this day but for Mr. Griffin's fecundating letter. In that letter he hails the "means" of accomplishing his object. Of what value, then, is the antiquity of Dr. Balfour's intention? is it not rather a proof of its uselessness when compared with the young intention of the Griffins, so full of vital energy?

We have been thus minute upon the relation of the author and publisher as disclosed in these two first letters, because it lies at the foundation of the questions in dispute, taken up by Dr. Balfour with such terrible earnestness, and concerning so nearly his reputation. To us nothing appears clearer than that in Mr. Griffin's letter he proposes to Dr. Balfour to perform a definite literary service, and that the latter in his reply accepts the same. What follows in the doctor's letter only strengthens this view. Like a sensible man, the writer sees that "the great difficulty is in procuring woodcuts," and he is glad to think that it is likely to be got over. The work is one of adaptation, and that he says is easy. He wants a text-book, and he "would feel at liberty" to make some modifications in Jussieu's book for that purpose. All seems favourable, and the world is likely to get its cheap hand-book of botany. But now, let us suppose that Mr. Griffin's letter not to have been written to Dr. Balfour, and which would the public have had soonest, or at all—Griffin's volume, "Botany," or "Balfour's text-book"?

Mr. Griffin goes on to remind the doctor:—

"In February, 1847, I resolved to visit London and Paris, to make arrangements for carrying out my scheme, and to pass through Edinburgh on the way up, to ascertain what literary aid I could obtain there. On the 11th of February I called upon you, and it was agreed between us that you should execute the volume on botany, provided that on my arrival in Paris I should still think it expedient to purchase, and should succeed in obtaining, the cuts of Jussieu's 'Manual.' The knowledge, possessed by both of us, that the French publisher had hawked some of his casts too much in England rendered it expedient that I should make certain inquiries before buying them at all. It was agreed that if I bought them I was to let you know immediately, that you might proceed with the work, and have it ready for use the next season; but whether you should or should not write the work was left entirely contingent upon the fact whether I did or did not purchase the casts of the cuts of Jussieu's 'Manual.' It was not the case that you were, at all events, writing a text-book, of which I was to have a licence to print an edition; but it was the case that I was projecting a series of publications, on one of which you were to work, provided that on my arrival in Paris I should still think it expedient to carry the project into execution. If I had failed in obtaining the engravings, your 'Manual' certainly would not have been written for me, and perhaps would never have been written at all. To such an extent was the enterprise mine, not yours. On arriving in London I found that

the 'Encyclopædia Metropolitana' was for sale, and, perceiving in that work the means of giving great support to my plan of publishing a cheap series of scientific manuals, I purchased it for the company with which I am connected, and with the intention to extend and complete it, in accordance with Coleridge's original plan. This purchase prevented my journey to Paris. Nevertheless, on the 7th of April, I wrote you word that I had purchased the casts of the botanical cuts, and I urged you to proceed with the 'Manual' rapidly. It was to have been ready by the spring of 1848, but you did not complete it till the spring of 1849."

Adding here that the sum stipulated to be paid to Dr. Balfour on the completion of the work was £200, we take leave of the original agreement.

In the spring of 1849 the last sheets had left the writer's hands, and Mr. Griffin received a note from the author, in which he proposed to draw for the £200 as the price of the first edition. The publisher was exceedingly surprised at this limitation of his property, which he conceived was as contrary to the special agreement as it was incompatible with the expenditure incurred on the work, and with the price at which the latter was to be offered to the public.

Did Messrs. Griffin deny that this copyright of all editions subsequent to the first, plus £200, as claimed by Dr. Balfour, was disproportioned to the intrinsic value of his work? Nothing of the kind. As men of business, as men of sense, they could not have made such a comparison. The intrinsic value of philosophy is something so far removed from worldly standards that £1000 is as far from being its equivalent as £200. This intrinsic value is something to be approximatively conceived, and acknowledged by social respect, but it cannot be weighed in the scales of commerce. Without the least disparagement to Dr. Balfour's talents, Messrs. Griffin reminded that gentleman of the circumstances which made the work originally and essentially theirs. They pointed out that the wisest book is but a commodity when brought into the market, and no more exempt from the common laws of profit and loss than if it were a pig of lead, or a mere diamond. They showed that the "Manual" would cost them for authorship, engravings, and advertisements, £500, a sum which no firm could have dreamt of sinking upon one edition of a small, new, low-priced volume. This ground they were bound to take, for when publishers begin to disregard such considerations they are soon out of a condition to deal at all with literary men, and find their way into the *Gazette*.

Unhappily, these representations did not alter Dr. Balfour's views, and the matter was referred to solicitors. Ultimately the following receipt was signed:—

"Edinburgh, 9th April, 1850.

"Received of John Joseph Griffin and Charles Griffin, publishers in London, the sum of two hundred pounds sterling, on the terms that I assign to them, as I hereby do, my interest in the copyright of a work entitled 'A Manual of Botany,' founded on the model of De Jussieu's 'Cours Élémentaire de Botanique,' and consisting in part of a translation of that work undertaken at their request; and I authorize them to publish the said work, on their own account, in any manner they think fit, and to enter themselves in the registry book of the Stationers' Company of London, as the proprietors of the said copyright.

(Signed)

"J. H. BALFOUR."

Here closes the first part of the transaction. The book was published and universally praised, but not, we believe, above its deserts. Dr. Balfour might now congratulate himself that, if his professional enthusiasm had carried him somewhat beyond the terms of his agreement as to the pains bestowed on the "Manual," he had, on the other hand, been enabled to make his bow in a department of literature under circumstances most favourable to success. He had now the much-desiderated text-book for his class, and soon saw

it adopted in the ancient universities of the empire. These were advantages which might well be reckoned when considering the rewards of his literary labour.

In a preceding extract it is intimated that Messrs. Griffin became the purchasers of "The Encyclopædia Metropolitana." After offering for sale the various original treatises of that national work separately in their original form, the proprietors resolved to publish a second edition in a series of cabinet volumes, and the size of crown octavo. The works of Coleridge, Maurice, Whateley, Senior, and men equally eminent had already appeared, when Messrs. Griffin proposed to introduce Balfour's "Botany" into the series in lieu of an older treatise. The plenary powers over the "Botany" which they had purchased of Dr. Balfour gave them the right to do so without application to the professor, but, although eighteen months only had elapsed since the publication of the first edition, Mr. Griffin, as was due, wrote to Dr. Balfour to know whether it would be agreeable to him to revise the work, and on what terms. The following was the professor's answer:—

"Edinburgh, June 20, 1860.

"Sir,—In reply to your letter I beg to state that I have resolved to have nothing more to do with the 'Manual of Botany.' I am making preparations for an elementary work on botany, over which I am to have complete control. I shall never give my name to any work of which I do not retain the copyright. I certainly would never have written the 'Manual,' had I not supposed that such was the case in regard to it.—I am, sir, your obedient servant,

"To J. J. Griffin, Esq."

"J. H. BALFOUR."

Mr. Griffin's pamphlet informs us that, before the date of this letter, he had offered to secure to the author the right to make corrections in the work every time it should be reprinted, and to bind himself to keep the price within the means of students as a class-book. He had further offered him £50 for editing this second edition of this eighteen months' old work; to pay him for editing a third edition one shilling a volume upon all that were printed; and at the end of three years after the publication of the third edition absolutely to assign to Dr. Balfour the copyright of the 'Manual.' After the letter of refusal, namely, on the 15th of November, 1860, Mr. Griffin offered the doctor £100 to correct the second edition, and this was refused. Mr. Griffin thus puts the case to the Professor Balfour:—

"The 'Manual' was invented by me. I found the money to pay for the casts, and for all the other engravings that were cut; for the printing of your nearly illegible MS.; for the books that were made imperfect by the forced sale of odd sheets among your pupils; for nearly fifty copies of the 'Manual' given away to your friends, professors, and reviewers, in order to show the book; for a large amount of advertising; for payment of the copyright. I may add to this, the effects of my own exertions and those of my partner, and the power of an established business exerted to make the book succeed. When success is attained, you come forward to claim as *yours* the property produced by this combination of capital and labour. Nothing so perfectly extravagant is to be found in Mr. D'Israeli's 'Curiosities of Literature.'"

Let the reader not think we detain him too long over these particulars. The production of good and cheap books he will not deny concerns him most intimately; and here is an attempt which, if successful, would put an effectual stop to the efforts of publishers to serve the public.

The second edition of the "Manual" was to come out, and the author refused to edit it. The publisher was still desirous of agreeing with him, willing to pay him what he conceived to be his due, but determined not to surrender at dictation property to which he had no title. It was necessary to put the work immediately to press, and, as the first edition had only been finished eighteen months, it was thought that the work could require but little alteration. Though botany is a progressive science, it does not become antiquated in

eighteen months. Moreover, as the publisher believed the doctor's resolution to repudiate the work could not endure long, he resolved to reprint the work *verbatim*, correcting only the evident errors of the press, and relying upon the probability of some arrangement by the time a third edition was required. With this view he employed a gentleman well acquainted with botanical literature to edit the second edition of the "Manual" anonymously.

The result now lies before us,—a handsome volume of above 600 pages of crown octavo, with more than 800 woodcuts, the whole admirably printed, and worthy the series in which it appears. Of the editor's part we shall have to speak presently.

Shortly after the publication of this edition a review appeared in a newspaper—the *North British Agriculturist*—of which it is admitted by the proprietor that Dr. Balfour writes the leading articles, in which the editing of the "Manual," and the circumstances under which it appears, are remarked on in a manner which reveals anything but the serene, the public-minded, the impartial judge.

Thus, what shall we think of a writer who pretends, for his purpose, to talk of "the omissions of the many important discoveries in physiology and other departments," which have been made during the few months intervening between the first and second editions?—or of his remarks on the absence of Brogniart the geologist's new discoveries from this students' class-book? It is impossible to avoid seeing that a factitious importance has been given to those subjects, for the purpose of disparaging a work in which they had no proper place. Some of the allegations in this "review" turn upon matters of fact. Thus, when Professor Balfour's newspaper informs the world that the errors of the first edition are multiplied in the second, and that the volume is not a correct reprint of the former "Manual," the statement is answered by a simple assertion of fact. Four hundred and nine errors discovered in the first edition, and made up of errors in matters of fact, bad English, and worse Latin and Greek, were corrected in the second. However, let this go. In Mr. Griffin's estimation the worst feature in the attack is that it proceeded from Dr. Balfour's newspaper, and would be accepted by the unwitting world as the doctor's serious and painful, but necessary, vindication of his literary and scientific character against a spurious work. But Mr. Griffin shows that, in this exact reprint of a work itself new, any faults must of necessity be Dr. Balfour's. We are sorry to see this alienation of the doctor from his offspring: prejudice, as too often happens, has been nourished by false friends, and the paternal heart hardened against the child. We would effect a reconciliation. Let the doctor look for himself on the face of his little one, instead of lending his ear to the insinuations raised against its character by false friends, and he will see how much both parties have been wronged.

There is one part of the review, however, which implicates Professor Balfour himself too closely to pass unnoticed. It is said "the professor has informed his class that the edition has not been edited nor corrected by him; that he is not responsible for it; and that, in fact, he does not sanction its publication." Mr. Griffin points out that this is an express violation of the written promise to use the "Manual" in his class as a text-book. So far as a breach of a legal agreement is concerned, we apprehend there is a proper remedy, and therefore dismiss that part of the case; but how far Dr. Balfour was justified in making his class, as well as the press, the instrument of his wrath, the public will judge.

In "The Monthly Journal of Medical Science," for June, 1861, published at Edinburgh, and, as stated in the titlepage, conducted by seven professors of the Edinburgh

University, a second review of the "Manual" appears. With the exception of one paragraph in it, where the writer pities Dr. Balfour as "a green young author," and cautions of "the mysterious commercial arrangements of the republic of letters," the review may be regarded as virtually identical with that which appeared in Professor Balfour's paper; indeed there are signs, all but infallible, that they were written by the same hand; and, if we are not mistaken, the style betrays the dainty composition of one of the contributors of the periodical, whose name is affixed very near the bottom of the list. The same virulence, the same reckless assertion, the same happy abandon where facts are in question, is found in each lucubration.

This is not all. The first "review" was reprinted as a handbill, and copies found their way, through the post, throughout the length and breadth of the kingdom. Dr. Balfour was privately written to by the publishers of the "Manual," and returned no reply; the article was not disowned, and, meanwhile, a rival work was announced under Dr. Balfour's name. On behalf of dishonoured literature and science we protest against the abuse of their agencies to subvert the private and business views of their professors. From the documents printed by Mr. Griffin in the pamphlet referred to—on which, and not on his unsupported assertions, we have grounded our observations—we are compelled to infer a conspiracy of some kind to defame and destroy his fairly-acquired property, in order to revenge the fancied wrongs of a writer. In Heaven's name let the man of letters be liberally, honourably, tenderly dealt with. These are not the times when the world can afford to harden by harshness and poverty the sensibilities of those who can elevate, refine, and save it. But let the author never forget that no genius, no endowment, no abilities, can absolve him from strict integrity, the faithful observance of all engagements. Above all, let him seek to secure his rights by open, fair, and precise negotiations at the commencement of his transactions with men of business. To wait till the enterprising merchant has staked large sums on the success of a venture, and come forward, when it is too late for him to recede, with a new demand, to offer, as the alternative of compliance, an hostility formidable, and perhaps ruinous, is not only to injure commerce and outrage morality, but to wrong the public, and in the end destroy literature itself.

Mr. Griffin reprints at the end of his pamphlet notes from publishers at two universities returning the "Manual" because the students, acting, of course, under the guidance of their professors, will not use them. Our counsel to the public is, not to be befooled by any clique, by whatsoever great names its members may style themselves. It will be time enough to repudiate this edition of the "Manual" when something better is produced. As for those "great men" who have been concerned in carrying out this little piece of spite, we have an idea that for them the sooner their share in the matter is forgotten the better.

ON THE LUMINOUS ARC OF THE VOLTAIC PILE. By M. MATTEUCCI.

It is now, I believe, generally agreed that, notwithstanding the numerous and very important researches of Davy, Daniell, Grove, De la Rive, Fizeau, Foucault, Van Breda, Despretz, &c., respecting the luminous arc of the voltaic pile, we do not yet possess a true explanation of the phenomenon in all its bearings. It is with the object of contributing to the solution of this difficulty that I make the following communication.

At the moment of bringing together the extremities of a voltaic battery—whether those extremities be of metal or of charcoal—a very bright luminosity is perceived. Then, by separating the extremities or poles one from the other, there

is observed a sort of flame, spheroidal in form, and of a length proportionate to the activity of the battery. The extremities of the poles become incandescent, and globules of a fused matter move about upon the now corroded surface of the poles themselves. In the greater number of cases the luminous arc of the pile is composed of a central portion, more cylindrical than the rest, the basis of which rests on the polar extremities, and which burns with a brilliancy of great intensity; this cylindrical part is enveloped in a luminous flame of less intensity, and of spheroidal form, the colour of which depends on the nature of the substances of which the poles themselves are made. In proportion as the polar extremities are removed from each other, so does the central part, previously so bright, gradually diminish in intensity; whilst the intensity of the external or enveloping flame becomes increased.

It is capable of direct demonstration by experiment that the central portion of this voltaic light is composed of something in which the electric current takes its course as it would in a conductor of any other kind. For the purpose of demonstrating this I take a galvanometer with a single needle, and I attach at each of its extremities two long platinum wires, which I subsequently enclose in two tubes of glass at the distance of three or four millimetres. As soon as the luminous arc has been produced I plunge into it the extremities of the platinum wire, taking care that they remain separate one from the other, and that they do not touch any part of the pile. Immediately the platinum wires arrive at the middle part of the luminous arc the needle of the galvanometer begins to be deflected, and the deflection goes on augmenting proportionately with the depth of the luminous arc into which it is plunged. By reversing the position of the poles, or the respective adjustments of the platinum wire, the deviation takes place in an opposite direction. With points of charcoal or copper the part of the luminous arc which does not give a derivative current is much greater than when we operate with points of silver or iron.

By introducing a voltmeter within the circuit of the pile, and then developing the luminous arc with points of different nature, or removed to various distances, one may estimate with a certain degree of approximation the resistance opposed by the different luminous arcs.

SPECIFICATIONS OF CHEMICAL PATENTS.

George Frederick Muntz, jun., of Birmingham, gentleman, for improvements in furnaces, applicable to the melting of metals for making brass, yellow metals, and other compound metals. Patent dated January 18, 1851. Enrolled July 18, 1851. The object of this patent is to prevent the volatilization of zinc during the act of mixing it with other metals. The object is accomplished by closing up the melting furnace in such a way that the escape of zinc in vapour is prevented.

The furnace used by the patentee for this purpose is similar in its general arrangement to the ordinary reverberatory furnace employed for such purpose; it has, however, an arrangement of dampers, by which the melting chamber is cut off from the furnace, as also from the flue leading from it to the chimney. The grate is constructed in the usual manner, with the bridge between it and the melting chamber, over which the heat passes to the melting chamber, thence to the flue leading to the chimney. In addition to this passage to the chimney, there is another flue passing off from the opposite side of the grate; this is conducted in a rather more circuitous route than the other, by which more resistance is given to the products of combustion passing in that direction. Thus, as it were, there are two fire-bridges, one on either side of the furnace; dampers are placed at these two points, by which one passage or the other can be closed at pleasure. The dampers for this purpose are suspended from opposite sides of a beam, by which they are raised or lowered; by this arrangement the opening of one damper closes the other. These dampers are enclosed within the brickwork of the bridge, and are raised up from below when closed, and again lowered for the pur-

pose of opening the passage. The upper part of these dampers, when lowered, form the apex of the fire-bridge, and are made of materials capable of withstanding great heat, as large slabs of material, as used for making fire-bricks. These are made of sufficient length to extend across the entire length of the bridge, and pass into recesses on either side of the opening. Three or four of these fire-lumps are placed in an iron frame, consisting of a bar of iron a U form in its cross section, having vertical side pieces of a similar kind, into and between which the fire-lumps are slid, and rest on the cross-bar below. The side pieces of iron holding the bridge together are received within the recesses before mentioned, by which they are protected from the action of the fire; the fireproof material being the only parts exposed thereto. The ends of the bar extend beyond the width of the opening at the fire-bridge, from which two rods pass upwards through the brick, constituting the sides of the furnace; these are attached to a cross-head above the furnace, which is in connection with the lever or beam before mentioned. Both of the dampers are similarly circumstanced, so that by actuating the lever, from which they are suspended, the fire-bridge damper will be raised between the melting chamber and the furnace, while simultaneously therewith the opposite damper is raised. A third damper is placed in the flue leading up from the reverberating or melting chamber. This simply consists of a plate of cast iron, placed horizontally in a recess made in the brickwork of the flue, and so arranged that it can be slid off or on at pleasure. The recess containing this damper must be sufficiently large to move the damper free from the heat of the flue, in order that it may cool sufficiently at each time of its removal from the flue. The metals having been brought to a state of fusion, in the ordinary manner, as well understood, the fire-bridge dampers are first altered in their position, by which the heat of the furnace is turned off from the melting furnace through the opposite course to the chimney; the flue-damper over the melting chamber is now closed, by which that chamber is cut off from all external atmosphere, or as nearly so as possible. A small door or opening is then opened in the side of the melting chamber, through which the operator stirs the melted metal, in order to its combination. By thus protecting melted zinc from the action of the atmosphere, all, or nearly the whole, of that metal lost by volatilization, under ordinary circumstances, will be saved.

The patentee makes no claim to the general arrangement of the furnace, which is of the ordinary kind; but what he claims as his invention is, the construction of a furnace for melting and mixing of metals, for making brass, and other compound metals (in which zinc forms a part), which will allow of such metals, when melted, and during mixing, to be confined, or nearly so, from the air, by the furnace being converted into a close, or nearly close, chamber, thereby preventing a great part of the loss which occurred from volatilization in mixing such metals in the furnace hitherto used, prior to the date of this invention.

John Alexander Archer, of the Broadway, Westminster, tobacco-manufacturer, for improvements in the manufacture of tobacco. Patent dated January 11th, 1861. Enrolled July 11th, 1861.

The improvements of this gentleman's specification affect the construction of machinery employed in the operation of cutting tobacco. The machine consists of a suitable framing, upon which are mounted two endless chains, passing over their respective pulleys. Each of these chains carry laths or plates, so as to form aprons, and are for the purpose of feeding the tobacco into the cutting portion of the machine. One of these endless aprons is placed above the other; the lower one being in a horizontal position, and the upper one at an angle to the lower one, being closer together at the cutting than at the other or feeding end. The endless aprons move at equal velocities, and thereby carry the tobacco, which is spread by hand over the lower one, on towards the cutters, and these compress it considerably, by reason of its moving gradually on to the narrowest part between the aprons. The tobacco, as it leaves the endless aprons, is forced through a stationary mouthpiece, the top

and bottom of which are hollow, and into these steam is admitted, for the purpose of heating them, and thereby facilitating the passage of the tobacco through the mouthpiece; at the same time steam is allowed to have access to the tobacco passing through the mouthpiece in small quantities, from the hollows of the mouthpiece, by which the tobacco will be moistened, and the cutting operation facilitated. Steam is also projected on to the tobacco, in its passage along the endless aprons, from a perforated steam-pipe, for the same purpose. The upper and the lower plates of the mouthpiece, between which the tobacco is forced, are capable of adjustment closer to, or further from, each other, as desired. The cutters are curved, and are two in number: they are fixed upon the end of a horizontal shaft, to which a rotating motion is given, by which the cutters will rapidly pass the open end of the mouthpiece, and cut off those portions of the tobacco protruded from it by the action of the endless chains. The portions cut off fall down, and are received into a basket or other receptacle beneath.

The patentee claims the arrangement and construction of the machine.

ORRIS PERFUME.—Take best dried and scraped orris roots, free from mould. Bruise or grind them; the latter is best, as, being very tough, they require great labour to pound. Sift the powder through a fine hair sieve, and put the remainder in a baker's oven, and dry the moisture. A violent heat will turn the roots yellow. When dry, grind again, and sift; and repeat the same until the whole has passed through the sieve; mix nothing with it, as it would mould and spoil it.

TO MAKE CARMINE.—Pour two quarts of distilled water into a copper pan, and when boiling add 3ij of the best grain cochineal finely ground and sifted; boil it for six minutes, carefully stirring it the while. Then add 60 grains of fine Roman alum in powder, and boil three minutes longer, when it is set to cool; but while yet a little warm decant the clear liquor, and strain through silk into porcelain dishes, and in four days decant, and filter again into other dishes. The precipitate which has fallen down is then to be dried carefully in the shade, as it forms the finest carmine. The second deposition will not be so good. Adulterated with vermilion and red lead; but its merits may be known by its dissolving wholly in ammonia, and forming a deep pink colour. The finest is the lightest, and a good test is the filling of a very small thimble with the specimens, and weighing them comparatively.

CALOTYPE PAPER.—Take a sheet of the best writing paper, having a smooth surface and a close and even texture. Dissolve 100 grains of crystallized nitrate of silver in 6 oz. of distilled water. Wash the paper with this solution with a soft brush on one side, and put a mark on that side whereby to know it again. Dry the paper cautiously at a distant fire, or else let it dry spontaneously in a dark room. When dry, or nearly so, dip it into a solution of iodide of potassium, containing 500 grains of that salt dissolved in 1 pint of water, and let it stay two or three minutes in this solution. Then dip it into a vessel of water, dry it lightly with blotting paper, and finish drying it at a fire or by the air. The paper, so far prepared, is called iodized paper, because it has a uniform pale yellow coating of iodide of silver. This is the first part of the preparation of calotype paper, and may be performed at any time. The remaining part is best deferred until shortly before the paper is wanted for use. When that time has arrived, take a sheet of the iodized paper, and wash it with a liquid prepared in the following manner:—Dissolve 100 grains of crystallized nitrate of silver in 2 oz. of distilled water; add to this solution half of its volume of strong acetic acid; let this mixture be called A. Make a saturated solution of crystallized gallic acid in cold distilled water; the quantity dissolved is very small; call this solution B. When a sheet of paper is wanted for use, mix together the liquids A and B in equal volumes, but only mix a small quantity at a time. Wash a sheet of the iodized paper over with this mixture, laid on with a soft brush, let it rest half a minute, then dip it in water, and dry it ready for use. This must not be done by daylight.

PRICE CURRENT OF DRUGS, &c.

Articles having bd. or bond annexed are sold at short price exclusive of duty; when no duty is affixed the article is free. Add 6 per cent. to the duty on all articles excepting those having an asterisk prefixed. F. means foreign; B.P. British possessions.

DRUGS, &c.		Price.	
		£. s. d.	£. s. d.
ALKANET ROOT	cwt.	1 14 6	2 10 0
ALOE, Barbadoes		1 10 0	6 0 0
Hepatica		1 10 0	5 0 0
Cape		1 5 0	1 13 0
ALUM, British	ton	7 10 0	8 5 0
Roeh	cwt.	1 0 0	1 4 0
AMBERGRIS, Grey	oz	4 8 0	7 0 0
ANCHOVIES	dbles. bri.	17 0 0	18 9
ANGELICA ROOT	cwt.	1 0 0	1 5 0
ANKATTO, Flag	lb.	1 8 0	1 10
Roll		0 10 6	1 0
ANTIMONY, Crude	cwt.	1 8 0	0 0
Ore	ton.	13 0 0	0 0
Regulus Cps.	cwt.	2 4 0	3 0 0
Rowle		2 15 0	2 13 0
ARROW ROOT	lb.	0 3 0	1 0
ARSENIC, White	cwt.	17 0 0	18 0
Red		0 0 0	0 0
English White		12 6 0	1 0
Yellow		19 0 0	1 0 0
ARROL, Bologna	cwt.	2 0 0	2 12 0
Florence White		2 0 0	2 8 0
Red		2 0 0	2 5 0
Naples White		1 18 0	2 5 0
Red		1 12 0	1 13 0
Sicily White		1 8 0	1 16 0
Red		1 8 0	1 10 0
French		1 14 0	2 7 0
Cape		1 15 0	2 11 0
ASPHALTUM, Egyptian		2 10 0	4 15 0
BORACIC ACID	cwt.	2 12 0	2 13 0
BALSAM, Canada	lb.	0 10 6	1 0
Capivi		1 0 0	1 2
Peru		5 6 0	6 0
Tolu		3 6 0	4 0
BARILLA, Spanish	ton	0 0 0	0 0
Teneriffe		0 0 0	0 0
Sicily		0 0 0	0 0
East India		0 0 0	0 0
BARK, Peruvian, pale	lb.	1 6 0	2 6
Good		0 0 0	2 0
Mid., do.		1 1 0	1 2
Crown		1 3 0	2 2
Yellow, Flat		3 0 0	4 6
Quill		2 0 0	6 5
Red, Flat		7 0 0	0 0
Quill		2 0 0	4 6
Cascarilla	cwt.	1 0 0	1 15 0
Quercitron		8 6 0	9 6
Oak, English, per load		13 0 0	14 0 0
Foreign, per ton		3 0 0	6 5 0
New S. W.		5 0 0	8 0 0
BEERIES, Bay	cwt.	19 6 0	1 6 0
Juniper, Italian		7 6 0	8 0
German		8 0 0	12 0
Turkey, Yellow		3 15 0	6 0 0
Peruvian, do.		8 0 0	14 0 0
BLACK LEAD, E. I.	cwt.	10 0 0	1 0 0
Malaga		10 0 0	1 5 0
German		1 0 0	1 3 0
Dust		9 0 0	13 0
BORAX OR TINCAL	cwt.	2 10 0	2 13 0
E. I. Refined		3 16 0	2 18 0
English Refined		3 6 0	3 8 0
BRIMSTONE, Rough	ton	7 0 0	0 0
Boil		12 0 0	0 0
CAMPHOR, Unrefined	cwt.	3 5 0	3 10 0
Dutch		2 12 6	0 0
Refined	lb.	1 0 0	1 1
CANTHARIDES, bd.		3 0 0	3 6
CAPERS, French	cwt.	7 0 0	12 0 0
Capotta		6 0 0	7 10 0
CARDAMOMS, Malabar	lb.	2 6 0	2 9
Long Longs		3 0 0	3 4
Ceylon		1 2 0	1 4
CASTOR OIL, America	lb.	0 0 0	0 0
E. I., bd.		0 3 0	0 4 4
CHILIES, E. I.	cwt.	15 6 0	1 5 0
CHINA ROOT	cwt.	10 0 0	1 0 6
COCHINEAL			
Honduras Black	lb.	3 7 0	4 10
Silver		3 0 0	3 11
Mexican Black		3 4 0	3 9
Silver		3 0 0	3 3
COBALT	lb.	0 0 0	0 0
COCULUS INDICUS	cwt.	1 0 0	1 7 0

F. 2d. per lb.

B. P. 6d. F. 2s.

5s. per cwt.

3d. per lb.

6d. " B.P.

6d. per lb.

DRUGS, &c., continued.

		Price.	
		£. s. d.	£. s. d.
COFFEE, Jamaica, triage and ord.		1 12 0	1 18 0
good and fine ord.		2 0 0	2 6 0
low to good middling		2 8 0	3 10 0
fine middling & fine		3 12 0	4 10 0
Demerara, triage & ord.		0 0 0	0 0
good and fine ord.		0 0 0	0 0
low to good mid.		0 0 0	0 0
Berbice, triage and ord.		0 0 0	0 0
good and fine ord.		0 0 0	0 0
low to fine middling		0 0 0	0 0
Dominica and St. Lucia			
triage and ordinary		0 0 0	0 0
good and fine ord.		0 0 0	0 0
low to good middling		0 0 0	0 0
Ceylon, ordinary to very			
good ord. native		1 19 0	2 0 6
fine ord. to mid. plu.		2 2 0	2 12 0
good mid. to fine do.		2 14 0	3 15 0
Mocha, ord. & ungarbled		2 8 0	2 10 0
clear garbled ..		2 18 0	3 6 0
fine		3 10 0	4 8 0
Sumatra, Padang, &c. ..		1 18 0	2 0 0
Java		2 4 0	3 0 0
Mysore with certificate		1 18 0	2 10 0
Brasil, ord. to fine ord.		1 15 0	1 18 0
ex. fine plant. kind		2 0 0	2 15 0
St. Domingo		1 17 0	1 19 0
Havannah, ord. to g. ord.		1 18 0	2 0 0
fine ordin. to mid.		2 2 0	2 10 0
Cuba, ord. to good ord.		1 18 0	2 2 0
fine ord. to middling		2 4 0	2 15 0
Porto Rico		1 18 0	2 10 0
La Guayra		1 18 0	2 12 0
Costa Rica		2 0 0	2 12 0
COCOA, Trinidad, red		2 2 0	2 14 0
grey		1 16 0	2 1 0
Grenada		1 13 0	2 2 0
Para, St. Domingo, and Bahia		1 7 0	1 9 0
Guayaquil		1 9 6	1 10 0
COLOCYTH, Turkey	lb.	0 6 0	1 9
Spanish		0 11 0	1 6
COLOMBO ROOT		2 16 0	2 19 0
COFFERAS, Green, bc.	ton	1 10 0	2 15 0
Blue		1 8 0	1 10 0
CREAM TARTAR, French		2 18 0	3 8 0
Venetian		3 5 0	3 8 0
CUBES	cwt.	3 10 0	4 5 0
CUTCH		20 0 0	22 0
DRAGON'S BLOOD	lump	3 10 0	9 15 0
Reed		8 0 0	14 10 0
DYEWOODS:			
Brasil	ton	45 0 0	80 0 0
Barwood, Angola		0 0 0	0 0
Camwood		13 15 0	28 15 0
Fustic, Brasil		0 0 0	0 0
Cuba		8 10 0	9 0 0
Jamaica		5 0 0	5 10 0
Spanish		4 0 0	4 10 0
Zante		0 0 0	0 0
Logwood, Campeachy		6 10 0	6 15 0
Honduras		5 0 0	5 10 0
Jamaica		3 10 0	4 0 0
St. Domingo		4 0 0	5 0 0
Nicaragua, Lima		14 0 0	15 0 0
solid		12 0 0	17 0 0
small and mid.		6 10 0	12 0 0
Red Sanders	ton	4 10 0	5 15 0
* ESSENTIAL OILS			
Cloves, bd.	lb.	2 8 0	5 4
Caraway		6 3 0	5 4
Lavender		2 6 0	7 0
Peppermint, bd.		4 0 0	11 0
Spike		4 0 0	0 0
Aniseed, bd.	lb.	0 0 0	5 8
Cassia, bd.		9 0 0	9 6
Cayaput, bd.	oz.	0 33 0	0 4 4
Cinnamon, bd.		0 10 0	3 0
Mace (expd.), bd.		0 3 0	0 5 4
Nutmeg, bd.		0 4 0	0 5 4
Bergamot	lb.	9 0 0	9 9
Lemon		8 6 0	8 9
Orange		6 9 0	7 0
Rosemary		1 8 0	2 6
Thyme		2 2 0	2 0
Otto Roses	oz.	13 6 0	1 0 0
Almonds	lb.	1 5 0	0 0
GALANGAL ROOT, bd.	cwt.	14 0 0	1 4 0
GALLS, sorts	cwt.	4 0 0	4 10 0
Green or White		2 15 0	3 10 0
Blue		4 12 0	5 5 0
E. I. Blue	bd.	3 10 0	5 0 0
GENTIAN ROOT	cwt.	1 1 0	1 2 0
GLUE, Best Town	cwt.	1 5 0	1 0 0
Interior		0 0 0	0 0
Foreign		1 10 0	2 5 0
GUINEA GRAINS, bd.		2 5 0	0 0

nominal.

3 s. per lb.

1 s. per lb.

d. per lb.

15 s. per cwt.

DRUGS, &c., continued.		Price.			DRUGS, &c. continued.		Price.		
		£. s. d.	£. s. d.				£. s. d.	£. s. d.	
GUTTA PERCHA lb.		0 10 @	1 0		IRON, British Bars		5 2 6 @	5 10 0	
GUMS:					Rods		6 5 0 @	6 15 0	
Ammoniac, Lp. .. . cwt.		9 6 @	1 10 0		Hoops		7 0 0 @	7 10 0	
Drop		1 15 0 @	3 15 0		Sheet		7 15 0 @	8 5 0	
Arabic, E. I. .. .		1 13 0 @	1 12 0		Cargo in Wales Bars		4 10 0 @	0 0 0	
Cape		1 13 0 @	1 2 0		Pigs No. 1 Wales		3 0 0 @	4 0 0	
Turkey, fine		8 10 0 @	10 0 0		No. 1 Clyde		1 19 6 @	1 0 0	
Sods and 3rds ..		3 5 0 @	6 0 0		Russian .. . C.C.N.D.		0 0 0 @	0 0 0	
Australian		1 17 0 @	2 0 0		P.S.I.		0 0 0 @	0 0 0	
Barbary, Brown ..		1 15 0 @	2 10 0		Archangel		0 0 0 @	0 0 0	
White		3 5 0 @	2 15 0		Swedish		11 10 0 @	12 10 0	
Gedda		3 0 0 @	12 0 0		LEAD, British:				
ANIMI, washed		3 0 0 @	12 0 0		Pigs ton		17 0 0 @	0 0 0	
scraped		6 0 0 @	13 0 0		Sheet milled		18 0 0 @	18 5 0	
Copal lb.		0 6 @	8 8		Shot Pat.		19 10 0 @	20 10 0	
ASAFETIDA .. . cwt.		10 0 @	4 10 0		Red or Minium ..		18 10 0 @	19 0 0	
BENJAMIN, 3rds ..		4 0 0 @	9 10 0		White		23 0 0 @	25 0 0	
1st and 2nds ..		1 0 0 @	45 0 0		Litharge		19 0 0 @	0 0 0	
DAMMAR		1 10 0 @	1 18 0		Pig Spanish		0 0 0 @	0 0 0	
GAMBAGE		5 0 0 @	10 0 0		American		0 0 0 @	0 0 0	
GALBANUM		3 10 0 @	3 0 0		STEEL, English		0 0 0 @	0 0 0	
GUAIACUM lb.		2 0 0 @	10 0 0		Swedish Keg ..		14 15 0 @	15 0 0	
MYRRH, E. I. .. . cwt.		3 0 @	6 6		Faggot		15 15 0 @	15 15 0	
Mastic lb.		3 0 @	6 6		TIN, Blocks		4 4 0 @	0 0 0	
OLIVANUM .. . cwt.		10 0 @	2 14 6		Ingots		4 10 0 @	0 0 0	
SANDRACH		2 6 0 @	3 10 0		In Bars		4 5 0 @	0 0 0	
SENEGAL, garbled		3 0 0 @	4 10 0		Banca .. bd.		4 1 0 @	0 0 0	
TRAGACANTH, Picked		13 6 0 @	16 0 0		Straits .. bd.		4 1 0 @	0 0 0	
Sorts		4 6 0 @	10 0 0		Peruvian .. bd.		0 0 0 @	0 0 0	
LAC, Sticklac, Bengal		2 17 0 @	1 15 0		Plates, p. bx. of 225 Sheets:				
Siam, &c.		2 10 0 @	3 8 0		No. 1 C 13½ by 10 in.:		1 5 0 @	1 5 6	
Shallac, Liver .. cwt.		2 2 0 @	3 5 0		1 X		1 13 0 @	1 13 6	
Ruby		2 5 0 @	2 10 0		1 XX		0 0 0 @	0 0 0	
Orange		2 5 0 @	2 18 0		SPELTER on the spot .. ton		14 15 0 @	0 0 0	
Black		1 1 0 @	2 5 0		Delivery		14 15 0 @	0 0 0	
Blood		2 1 0 @	2 8 0		ZINC, English Sheet ..		21 0 0 @	0 0 0	
Seedlac cwt.		1 0 0 @	2 0 0		PLATINA ORN .. . oz.		0 0 0 @	0 0 0	
HELLBORN ROOT .. cwt.		1 18 0 @	3 0 0		ORSEDEW lb.		0 0 0 @	0 0 0	
HONEY, Fine lb.		1 8 0 @	3 0 0		QUICKSILVER		3 9 0 @	0 0 0	
ICELAND MOSS .. lb.		0 2 @	0 2		MUSK, good and fine .. oz.		10 0 @	1 5 0	
INDIA RUBBER, solid		0 8 @	0 2		NUX VOMICA, bd. .. cwt.		7 6 @	9 6	
bottles		1 2 @	2 6		OILS—Imperial measure:				
small		1 2 @	2 6		Olive, Florence, & chest:		15 0 @	18 0	
INDIGO lb.		4 2 @	4 7		Lucia, jars		5 0 0 @	0 0 0	
Bengal, fine blue ..		6 0 @	6 6		Gallipoli, 253 gals.		38 0 0 @	40 0 0	
good and fine violet and purple		3 6 @	5 2		Spanish, ditto ..		38 0 0 @	39 0 0	
ordinary and middling ..		4 7 @	5 0		Linseed .. cwt.		1 12 6 @	1 13 0	
good and fine copper ..		4 5 @	5 2		Rape, Pale		1 14 0 @	0 0 0	
ordinary and middling ..		3 2 @	5 0		Brown		1 12 0 @	0 0 0	
Consumers, good and fine		4 8 @	4 6		Cod tan.		37 0 0 @	0 0 0	
ordinary and middling ..		3 2 @	4 6		Seal, Pale		35 10 0 @	0 0 0	
Java, good and fine ..		4 3 @	4 6		Brown, yel., and straw		34 0 0 @	34 10 0	
Cude, good and fine ..		3 3 @	4 6		Sperm		84 0 0 @	86 0 0	
ordinary and middling ..		2 2 @	4 3		Head Matter		90 0 0 @	0 0 0	
Madras, good and fine ..		1 9 @	3 0		Whale, Greenland		0 0 0 @	0 0 0	
ordinary and middling ..		3 6 @	5 6		South Sea		32 0 0 @	33 0 0	
Kurpah, good and fine		3 0 @	3 5		Cocoa Nut .. cwt.		1 10 0 @	1 14 0	
ordinary and middling ..		3 0 @	3 5		Palm cwt.		27 10 0 @	0 0 0	
Manilla good and fine		Withdrawn.			OLIVES, French & bars .. 2 gals		3 0 0 @	4 0 0	
ordinary and middling ..					Spanish, keg 2 galls.		9 0 @	10 0	
IPECACUANA lb.		5 0 @	5 6		OPIMUM, Turkey, bd .. lb.		10 6 @	11 2	
ISINGLASS LEAF, 1st sort ..		10 0 @	13 6		Egyptian		7 6 @	8 6	
2nd sort		9 0 @	10 0		ORCHILLA, Angola .. ton		35 0 0 @	0 0 0	
Simovia		2 0 @	2 9		Cape de Verd ..		25 0 0 @	35 0 0	
Siberia Furze		5 0 @	6 0		Madeira		30 0 0 @	0 0 0	
Short Staple, 1st ..		8 0 @	14 0		ORPIMENT, E. India .. lb.		0 8 @	0 0 0	
Long ditto		10 0 @	14 0		ORANGE FLOWER water ..		5 0 @	0 0 0	
ISINGLASS, Brazil .. lb.		0 6 @	5 6		Peel		1 18 0 @	2 2 0	
JALAP		1 4 @	2 2		ORRIS ROOT cwt.		0 6 @	0 0 0	
JUICE OF LEMON .. gal.		0 10 @	1 0		PILLITORY ROOT .. lb.		0 5 @	0 8	
LAC DYE, Fine lb.		1 8 @	1 5		PINK ROOT lb.		5 6 @	0 0 0	
Good		1 0 @	1 2		PITCH, British .. cwt.		7 6 @	0 0 0	
Middling		0 5 @	0 11		Archangel		12 0 @	0 0 0	
Ordinary		0 3 @	0 8		Stockholm cwt.		0 0 @	0 0 0	
Lake		3 5 0 @	3 12 6		Burgundy		5 0 @	8 0 0	
LIQUORICE Paste, Ital. .. cwt.		4 0 0 @	5 15 0		PUMICSTONE, sorts .. ton		8 0 @	12 0	
Block		2 6 0 @	3 10 0		QUASSIA cwt.		3 9 @	0 0 0	
MADDEES, Dutch Crop .. cwt.		2 2 0 @	2 5 0		RHATANIA ROOT .. lb.		0 5 @	3 3	
Ombro		1 5 0 @	1 10 0		RHUBARB, round ..		0 6 @	3 3	
Gamene		1 8 0 @	12 6		Flat		2 6 @	3 9	
Mull		0 0 @	0 0		Dutch, trimd. ..		10 0 @	12 0	
French		1 10 0 @	2 0 0		Russian		0 0 @	0 0 0	
Spanish		1 6 0 @	1 10 0		SAGOHARUM SATURNI, bd. .. lb.		1 1 0 @	1 8 0	
MADDER ROOTS, Turkey ..		2 0 0 @	2 2 0		SAFFRON, Spanish .. lb.		18 0 @	18 6	
MAGNESIA, English ..		3 0 @	3 6		*SAGO common .. cwt.		19 0 @	1 3 6	
MANNA, Flakey lb.		1 0 @	1 6		Pearl		14 0 @	15 0	
Sicily		18 0 @	1 2 0		Sago Flour		1 10 0 @	1 13 0	
MUNJRET, E. I. .. cwt.					English, Refined ..		6 6 @	7 0	
METALS:					SALTS, Glauber ..		6 0 @	6 0	
Brt. Cakes ton		84 0 0 @	0 0 0		Epsom		18 15 0 @	14 5 0	
Tile		83 0 0 @	0 0 0		SALRP		0 10 @	1 2	
Sheets lb.		0 9 @	0 0		SARAFABILLA, Brazil .. lb.		0 10 @	1 6	
Bottoms		0 10 @	0 0		Honduras				
Old		0 2 @	0 0						
S. American ton		86 0 0 @	0 0 0						
Foreign Cake		0 0 @	0 0						
Foreign Tile		0 0 @	0 0						

B.P. 5 F. 10s.

Public Sale Prices.

F 1 0 0 cwt.
BP 10 0 cwt.

per cwt. unwrought 4s.
B.P. 8s. 9d. F.
wrought B.P.
5s. F. 10s. old
B.P. 3s. 6d.
old F. 7s. 6d.

6 0
0 0B.

10 per cwt.

5 0 p. cwt.

2 0 2 0 gall.
0 1 0 p. lb.

DRUGS, &c., continued.		Price.		DRUGS, &c., continued.		Price.	
		£.	s. d.			£.	s. d.
SARSAPARILLA, Vera Cruz		0	4 0	0	5		
Jamaica		1	6 0	2	3		
SASSAPARILLA ROOT ton	10	0	0 0	12	0	0	0
SASSAPARILLA, E. I. cwt.	5	0	0 0	5	0	0	0
Safflower, Bombay		1	5 0 0	2	0	0	0
SHUMAC, Malaga cwt.	12	0	0 0	12	6		
Sicily	14	6 0	15	0			
Trieste	4	6 0	6	6			
SALTPETRE, Rough	1	6 0 0	1	9	6		
British, Refined		1	9 0 0	1	9	6	
Nitrate of Soda		14	3 0	14	6		
British, Refined		0	0 0	0	0		
SCAMMONT, Smyrna lb.	5	0 0	7	0			
Aleppo, 2nds		10	0 0	15	0		
See		1	8 0 0	1	15	0	
SEEDS, Aniseed cwt.	3	2 0 0	3	5	0		
German	2	2 0 0	2	5	0		
E. I. Star	3	5 0 0	3	10	0		
Commis	3	15 0 0	3	10	0		
Caraway, Foreign		19	0 0	1	10	0	
SENEGA ROOT lb.	0	6 0	1	0			
SENEGA, Alexandria lb.	0	2 0	0	6			
Smyrna	0	0 0	0	0			
East India	0	1 0	0	5			
Tinnevely	0	24 0	1	4			
SMALTS, Saxon, YFFE lb.	1	2 0	0	0			
YFFE	1	7 0	0	0			
Danish, YFFE	1	3 0	0	0			
YFFE	1	8 0	0	0			
Snake Root lb.	0	4 0	0	8			
SOAP, Naples, soft	1	6 0	1	9			
Castile, hard cwt.	3	0 0 0	0	0			
British, Mettled		2	2 0 0	3	4	0	
Yellow		1	15 0 0	2	3	0	
White		2	14 0 0	0	0	0	
Scented		0	0 0	0	0	0	
Windsor		0	0 0	0	0	0	
Oil	0	0 0	0	0			
Soft B. B.	1	0 0 0	0	0			
B. B.	0	0 0	0	0			
B.	0	0 0	0	0			
SODA ton.	6	10 0	0	0			
ASHES, Canada Pot 1st. cwt.	1	14 0 0	0	0			
Pearl 1st	1	13 0 0	0	0			
United States Pot	0	0 0	0	0			
Pearl	0	0 0	0	0			
gallon	4	0 0	4	6			
SOY, bd.							
SPICES—							
Cassia Lignea, ord. to mid.		4	16 0 0	4	19 0		
good to fine	5	0 0 0	5	3 0			
Cassia Buds	5	10 0 0	5	12 0			
Cinnamon, Ceylon, 1st quality		2	5 0 0	3	4		
2d	1	4 0 0	2	4			
2d	1	0 0	1	10			
Malabar	0	0 0	0	0			
Tellicherry	0	0 0	0	0			
Cloves, Amboyna	0	8 0	0	10			
Bourbon & Zanzibar		0	54 0	0	64		
Penang	0	10 0	1	2			
Ginger, Bengal	15	0 0	3	10 0			
Malabar	17	0 0	3	0 0			
Jamaica	3	9 0 0	10	0 0			
Barbadoes	0	0 0	0	0			
Mace	1	10 0	2	7			
Nutmegs, brown	9	0 0	3	9			
Ilmed	1	4 0	3	0			
Pepper, bd. Malabar, heavy shot		0	34 0	0	34		
light and half heavy		0	34 0	0	34		
Eastern	0	34 0	0	34			
White	0	54 0	0	100			
long	0	0 0	0	0			
Pimento	0	54 0	0	6			
SPONGE, fine lb.	9	0 0	1	5 0			
ordinary	1	0 0	7	6			
SULPHATE OF QUININE oz.	11	9 0	12	0			
SQUILLS, dry lb.	0	1 0	0	2			
undried	0	0 0	0	0			
SPERMACE, English lb.	1	4 0	1	5			
American	0	0 0	0	0			
STARCH, English	2	6 0 0	2	12 0			
Irish	0	0 0	0	0			
POTATO FARINA	14	6 0	15	6			
TALLOW:							
Petersburg, new cwt.	0	0 0	0	0			
old	1	17 6 0	1	18 6			
Delivery last three months		1	18 0 0	1	19 9		
South American	1	17 3 0	1	17 6			
Odessa Sheep	0	0 0	0	0			
North American	0	0 0	0	0			
Australian	1	15 0 0	1	17 3			
Town Tallow cwt.	1	19 6 0	0	0			
Fat by ditto	3	1 0	0	0			
Russian Candle	1	19 6 0	0	0			
Melted Stuff	1	8 0 0	0	0			
Rough ditto	18	0 0	0	0			
Graves	9	0 0	0	0			
TALLOW:							
Good Drugs	6	0 0	0	0			
PRICES OF CANDLES, per doz.:							
Mould Candles	6	0 0	7	0			
Store ditto	4	6 0	5	6			
TAMARINDS, West Ind. cwt.	1	10 0 0	3	0 0			
East Ind., bd.	13	0 0	16	0			
TAPIOCA lb.	0	2 0	0	4 1/2			
TEA: bd.							
Bohea, Canton, & Woking		0	6 0	0	7		
Fokien	0	0 0	0	0			
Congou, ordinary and out		0	9 0	0	9 1/2		
of condition	0	10 0	0	10 1/2			
good ordinary	0	10 0	0	10 1/2			
mixed blackish leaf	0	11 0	0	11 1/2			
rather blackish leaf	0	11 0	0	11 1/2			
blackish leaf	0	11 0	0	11 1/2			
ditto rather strong to		1	0 0	1	1 1/2		
strong	1	2 0	1	5			
Pekoe kind and flavour		0	11 0	1	6		
Ning Yung, fair to fine		0	9 0	1	0		
Pouchong	0	0 0	0	0			
Caper, chests	0	11 0	1	6			
do. in 10 lb. Catty boxes		0	0 0	0	0		
Campol, common	0	0 0	0	0			
good to fine	0	10 0	1	2			
Souchong, ordinary to good		1	4 0	2	0		
fine	1	0 0	1	3			
Flowery Pekoe, flat		1	6 0	2	3		
fair to fine	2	4 0	3	0			
very fine and flowery		0	10 0	1	4		
Black leaf Pekoe or Hong		0	11 0	0	11 1/2		
Muey	1	0 0	1	1			
Orange Pekoe, faint & odd		1	1 0	1	1		
common to fine plain	1	1 0	1	9			
common to fine scented		0	10 0	0	11		
Twankay, common	1	0 0	1	14			
good	1	2 0	1	3			
fine to Hyson kind	0	9 0	0	10			
Hyson Skin, common	1	0 0	1	2			
good to fine	1	1 0	1	3			
Hyson, common	1	4 0	1	10			
fair to good	2	0 0	2	6			
fine	2	10 0	3	10			
extra fine	0	8 0	1	1			
Young Hyson, common	1	2 0	2	7			
good to fine	1	2 0	1	4			
Imperial, common	1	5 0	2	6			
good to fine	0	8 0	1	7			
Gunpowder, common	1	9 0	4	0			
good to fine	15	0 0	13	0			
TURMERIC, Bengal cwt.	10	0 0	13	0			
Java	12	0 0	14	0			
Madras	15	6 0	16	0			
TERRA JAPONICA cwt.	1	2 0 0	1	4 1/2			
Sienna	16	0 0	17	0 0			
VALONIA, Smyrna ton	13	0 0	14	0 0			
Picked Morea	1	5 0 0	2	13 6			
VANILLAS, Brazil lb.	1	0 0	1	10 0			
Vera Cruz	0	9 0	0	10			
VERDIGRIS, Foreign	1	3 0	0	0			
English	4	0 0	4	3			
VERMILION, China lb.	5	0 0	0	0			
English	1	8 0 0	1	10 0			
VITRIOL, blue	14	0 0	0	0			
Foreign, white	1	4 0 0	1	5 0			
English, ditto	0	1 0	0	9			
Oil of	5	17 6 0	6	10 9			
WAX, Mogadore cwt.	5	5 0 0	0	0			
American	7	10 0 0	0	0			
Russian	7	13 6 0	8	0 0			
Hambro'	4	7 0 0	8	2 0			
East India	5	0 0 0	7	0 0			
African	7	0 0 0	8	10 0			
White Hambro'	2	0 0 0	9	15 0			
English cwt.	5	15 0 0	6	18 0			
Cape	0	0 0	7	0 0			
West India	0	0 0	0	0			
WELD	0	0 0	0	0			
WOOD ton	1	0 0 0	1	15 0			
WOOD, Sapan Bimas	8	0 0 0	1	0 0			
Siam							

HYPOSULPHITE OF SODA.—Mix 1 lb. of finely-pulverized calcined carbonate of soda with 10 oz. of flowers of sulphur. Heat the mixture slowly, till the sulphur melts. Stir the fused mass, so as expose all its parts freely to the atmosphere, whereby it passes from the state of a sulphuret to that of a hyposulphite. Dissolve in water, filter the solution, and boil it immediately with flowers of sulphur. On cooling, after being now filtered, it will deposit beautiful crystals of the hyposulphite.

PUBLIC SALES OF DRUGS.

August 7th.—By J. T. JONES.—20 casks Turkey Gum Arabic, 65s., sold; 17 casks Cream Tartar, 65s. to 66s. 6d., sold; 25 bales Alkanet Root, 34s. 6d. to 35s., sold; 1 box Caberdine Musk, 12s.; 10 cases Essence Lemon, 7s. 3d. to 8s. 6d., part sold; 12 cases Bergamot, 8s. 3d. to 9s. 6d., part sold; 27 crates Sassafras Root, 10s. 6d. to 11s., out; 9 cases Oil Peppermint, 5s. to 7s. 6d., out; 25 sacks Turkey Blue Galls, 96s., sold; 15 tins Balsam Tolu, out; 9 casks Guinea Grains, out; 4 cases Citronelle Oil, out; 100 bags Squills, 2d., taken in; 150 barrels Anchovies, 16s., out; 70 bags Farina, out; 7 casks Cod Liver Oil, out; 7 cases Castile Soap, 60s., out; 2 casks Verdigris, out.

By S. RUCKER and Sons.—26 chests Gamboge, fair pipe, £10 10s. to £11 10s.; 18 bags Cubebs, 63s. to 96s., sold; 9 cases Dragon's Blood, lump, 93s. to 109s., red, £10; 8 cases Gum Benjamin, £6 15s.; 8 casks Cantharides, 3s.; 8 tins Saffron, out; 20 boxes Isinglass, E.I., 2s. 3d. to 2s. 6d.

By C. L. JENKIN.—64 serons Red Bark, 2s. 8d. to 3s. 1d., sold, 2s. to 2s. 9d., taken in, 2s. 1d. to 3s. 6d., sold; 98 chests Crown and Grey Bark, 1s. 4d. to 1s. 8d., sold; 18 casks Flag Annatto, 1s. 1½d. to 1s. 2d., taken in; 15 tins Balsam Tolu, 3s. 6d., taken in; 3 casks Rose Leaves, 9d.; 2 cases Flakey Manna, out; 5 cases Oil Juniper, 2s. 3d. to 2s. 4d.; 5 cases Oil Rosemary, 2s. 6d. to 2s. 8d.; 46 cases and 2 casks Cod Liver Oil, 15s. to 17s. per doz. quarts, 10s. 3d. to 10s. 6d. per doz. pints; 16 packages Beeswax, £7, sold.

By THOMAS MERRY and Son.—20 caddies Tonquin Musk, 27s., taken in; 25 bags Star Aniseed, 75s.; 12 boxes Patchouli, 1s.; 100 serons Cascarilla Bark, 18s. to 34s., part sold; 5 boxes Scammony, 14s. 6d. to 21s. 6d.; 26 bales Simarouba Bark, 11d.; 1 box Gum Copal, 1s. 3d.; 7 cases Oil Cinnamon, 2s. 6d., sold; 3 bags Cummin Seed, 38s.; 13 bags Aniseed, 45s.; 16 bottles Iodine, 8½d.; 10 casks Grey Cream Tartar, 48s., sold; 15 casks White, 12 ditto Brown, Mogadore Gum, damaged, out; 36 packages Wheat Starch, 18s. 6d. to 21s.

By LEWIS and PHAR.—110 cases Castor Oil, good pale, 4d. to 4½d.; 10 cases Oil Cassia, 9s. 6d., part sold; 11 cases Cinnamon Oil, 1s. 1d. to 1s. 6d., part sold; 27 barrels Balsam Capivi, pale, 1s. 2d. to 1s. 2½d.; 7 casks Gum Senegal, 70s., taken in; 15 casks Gum Sandrac, 52s., taken in; 25 serons Yellow Bark, out; 8 bales Pareira Brava, 10½d. to 11d., out; 1 bale Aristolchia Root, out; 17 bales E. I. Senna, 1s. 1½d., sold; 1 box Isinglass, 21s., sold; 2 cases E. I. Ochre, red 3s., yellow 5s.; 20 half barrels Bermuda Arrowroot, 1s.; 30 casks Plumbago, 15s. to 17s. 6d., sold; 1 cask Naples Cream Tartar, 58s.; 57 bales Honduras Sarsaparilla, slightly mouldy, 1s. 3d.; 94 boxes E. I. Rhubarb, 8½d., taken in; 9 chests Gum Benjamin, 70s., taken in; 4 tins Fine Vanillas, 30s. to 32s.; 25 kegs W. I. Tamarinds, 23s. 6d., out; 8 tons Quassia, £4 10s., out; 22 chests Gum Myrrh, out; 2 chests fine Turkey Opium, 9s.; 2 chests Egyptian Opium, 9s.; 2 casks Flag Annatto, 1s. 1d. to 1s. 1½d., sold; 1 tin Musk, 23s. 9d., sold.

By ELLIS and HALK.—21 serons Ipecacuanha, 5s. 3d., out; 22 casks Cream Tartar, 55s. to 57s., and 62s., part sold; 110 pockets 141 bags Coculus Indicus, 25s. to 26s., sold; 8 bales Jalap, 2s. 6d., out; 40 barrels Gum Thus, 10s. to 11s. 6d., sold; 4 casks Turkey Arabic, 53s.; 16 packages Australian Arabic, 33s., 40s. 6d.; 6 chests Gum Benjamin, £7 2s. 6d. to £7 5s.; 6 chests Gum Ammoniacum, 12s., sold; 1 cask Flag Annatto, 1s. 1d., out; 4 cases Castor Oil, 3½d.; 12 casks Cod Liver Oil, out; 6 chests Seediac, bright seed, 2s.; 90 boxes Plumbago, 5s. 6d., out; 16 packages Bermuda Arrowroot, 1s., out; 31 packages St. Vincent Arrowroot, 4½d., out; 6 jars Essence Lemon, 7s. to 8s. 9d.; 3 cases Oil Sassafras, out; 5 boxes Rhubarb, 1s. 2½d., sold; 20 boxes refined Spermaceti, 2s. 3d., out; 12 kegs fine W. I. Tamarinds, 37s., sold; 29 caddies Musk, 4s. 6d. to 4s. 9d., 16s.; 6 boxes Zanzibar Aloe, 5s., 10s.; 5 chests Gum Damar, 38s., sold; 2 chests Gum Olibanum, out; 5 casks Honey, 28s.;

8 barrels Narbonne Honey, 45s.; 3 jars Orange Flower Water, 7½d.

By G. BROOKS and J. CLAXTON.—67 sacks Turkey Gum Arabic, 62s. 6d., 30s., out; 16 cases Egyptian Opium, 9s., 10s., 4s., part sold; 18 packages Scammony, 4s., 10s., sold; 22 cases picked Gum Arabic, £8, sold; 7 chests Turkey Opium, 9s., out; 30 sacks Turkey Blue Galls, 90s. to 87s. 6d.; 10 bags Orange Peel, 4s., sold; 6 cases Turkey Sponge, 10s. to 16s., sold; 3 chests Gum Tragacanth, 12s. to 15s., sold; 600 ozs. Otto Roses, 15s. 6d. to 17s. 6d., sold.

OUR GLEANINGS.

One of our pretty little Channel Islands is strongly infested, as most people know, with the heresy of homoeopathy. The history of that mighty science in this favoured spot is peculiar, owing its origin to no less an inciting cause than love—quackery prompted by Cupid—globalism out of love. So it was. There was a certain old lady who had amassed a certain wealth, and who possessed a daughter, amiable beyond even the natural amiability of her sex. This old lady was a doctor, and had wrought many cures by the exercise of her skill. All sorts of medical practice had come in for her advocates by turn, but, lastly, her affections rested on the philosophy of globulism. About the same period the affections of a certain gentleman rested upon her daughter. Well, the enamoured swain was a doctor, not yet perverted from the ways of philosophy, but, as the tale goes, all his solicitations for the daughter's hand were vain, until he, in deference to the mamma's commands, had changed his medical faith. He became a violent convert forthwith, and works great cures by homoeopathy.

The act of Parliament for regulating common lodging-houses took effect from Thursday week last, when it received the royal assent. The preamble declares that it would tend greatly to the comfort and welfare of many of her Majesty's subjects if provision were made for the well-ordering of common lodging-houses. Within the metropolitan police district the commissioners are to execute the act, and local authorities in other places. Notice is to be given within three months to all common lodging-house keepers to register the places, and a register is to be kept of the number of lodgers authorized to be received therein. After one month of giving such notice lodgers are not to be received in any common lodging-house until the same has been inspected and approved for that purpose by some officer appointed on that behalf by the local authority, and been registered. Regulations may be made for such places. The keepers of common lodging-houses are to give notice of fever, &c., and at all times to be open to free inspection, and when required to have the place cleansed. Penalties are to be recovered for offending against the act. The new law has operation throughout the United Kingdom with the exception of Scotland and the city of London.

Considerable excitement is at present rife at Liverpool, owing to the presumed unsound state of many who have too deeply engaged in cotton speculations. Two considerable failures are there announced, viz., Mr. George Wright (brother of Mr. William P. Wright, cotton-broker, of New York), whose liabilities are variously stated at £30,000 to £60,000; and T. W. Stock, for, it is said, a much larger amount. The latter is in the glass trade, but has made speculative ventures in cotton as well as in other articles of produce. There are rumours of other stoppages from the same causes—rumours which receive a sort of countenance from some forced sales which are being made at extremely low rates.

The *Illustrated London News* gives the following amusing calculation relative to the respiratory effect of 60,000 pair of lungs:—"60,000 human beings are pent up within these crystal walls, and our wayward contemplation wanders for a moment from the inanimate chemistry of the Glass Palace to the animate chemistry of 60,000 pair of lungs. Respiration is a sort of burning without fire, designed to rid the circulating blood of its carbon or charcoal, which latter as

effectually disappears by the act of respiration as a piece of charcoal disappears when thrown into the fire; disappears, but is not lost. Charcoal when burned unites with oxygen, a constituent of the air, and forms carbonic acid gas; this is the very gas evolved from the lungs; and, just as heat is developed by combustion, so is heat developed in the lungs. Respiration, then, as we have said, is only combustion without fire. As the presence of carbonaceous matter in the blood is so strongly repugnant to nature that an animal breathes even in sleep; and the heart, never tiring, pumps forth its dark and impure blood to undergo the process of burning off its carbon in the lungs—we may, indeed, be thankful that the evolved carbon is made to assume the form of an invisible gas: had it been otherwise, we should have been from one end of our lives to the other hid in sooty fumes. Each individual on an average evolves nearly 3000 grains of carbon in the course of twenty-four hours; therefore, the 60,000 people now present will, in the same time, have emitted from their lungs no less than *eleven and a half tons* of the matter of charcoal, which, if collected in a mass and burned under the steam-boilers of the Exhibition, would be sufficient to keep in motion the whole of the machinery for about the space of a week. Again, if the whole amount of heat produced by the respiration of the 60,000 people during the twenty-fours were collected, it would be found exactly equal to the amount of heat given off from the eleven and a half tons of carbon evolved, if condensed into fuel and burnt under the steam-boiler. But what becomes of the noxious carbon, in the form of carbonic acid emitted from the lungs? Nature will not have it in the animal economy, as we have seen; and if an animal be made to breathe this gas he dies. What, then, becomes of it? The provision is simple: vegetables greedily absorb the very gas which animals reject, reduce the carbon into a solid form, and liberate the oxygen again. Thus is the balance of purity in the air kept up." The above is an example of philosophy reduced to a very practical form; and another quotation from that journal, taken from the article "Gold," supplies us with a reason, unknown to us before, for a common designation of that precious metal. "Gold," says the chemical writer in this journal, "is a vulgar ostentatious metal, of which some people have such an abhorrence, that, to avoid uttering its very name, they call it tin. Since the recent St. Albans election, however, we have occasionally heard it termed *Bell metal*."

As an instance of the liberality of a Whig Government to inventors, we may cite the example of a recent patentee of a very useful machine for perforating postage stamps, by which operation a vast deal of time may be saved in public and private correspondence. His invention has been so well approved of that the Government wished to purchase the right to use it. The inventor was content to permit its use at a fair remuneration, when the Government liberally offered him £200. Of course the inventor indignantly declined to receive the award. Mr. Muntz, on Wednesday evening, stated that in deferring until next session his motion for a select committee to inquire and report upon the agreement entered into between the Commissioners of Inland Revenues and the patentee relative to the construction of the machine for perforating the sheets of postage labels, and whether it would be desirable to carry out the principle for general use, asked whether the Government would in the meantime issue the perforated postage stamps to the public? Mr. C. Lewis said it was not the intention of the Government to do so. Mr. Wakley asked why, as the plan was universally approved, the Government did not adopt it? Mr. C. Lewis replied that the compensation required by the inventor was more than the Government felt justified in awarding, and the machine was still the property of the patentee, and not of the public. Mr. Muntz believed the fact was that the Government had offered the inventor so small a sum that it was absurd to suppose he would accept it. No one knows better than Mr. Muntz the expense required to bring discoveries to perfection.

The dyeing portion of our readers will be glad to learn that, within a comparatively few years, the culture and growth of the cochineal insect have been introduced, and so successfully

carried out in various parts of the Old World, that the quantity yearly produced now rivals the whole amount obtained from Central America. In 1831 the culture of the cochineal was commenced in the Canary Islands, and the first crop consisted of only 8 pounds; in 1832 it was 120 pounds; in 1833 it had risen to 1319; and in 1849, we learn by a late official document, the enormous quantity of 800,000 pounds was exported from these islands, the greater part of which was sent to England and France. In 1845 the quantity of cochineal produced in Java, under the patronage of the Dutch Government, amounted to 45,000 pounds. Under the auspices of the French Government, plantations have been commenced in Algeria, which promise to succeed admirably. Some specimens already exported have been pronounced to be superior to the finest qualities from Mexico. Soils unfit for the cultivation of the vine or potato readily support the cactus, on which the cochineal insect feeds, while the insect can be more readily raised than the silkworm, and with less chance of loss.

TO CORRESPONDENTS.

*^o Gentlemen who send manuscript to the *CHEMICAL RECORD* under arrangement for payment are informed that original matter alone will be allowed to count; no abstracts, translations, or adaptations being receivable under the terms proposed. The propriety of this will be obvious.

"Silica" is referred to our editorial article on the new Pharmacy Bill. "Ignotus," should procure the "Dictionary of Arts and Science," by Professor Brande. It is published, we believe, by Messrs. Longman and Co., and may be obtained through the intervention of any bookseller.

"Mr. N. Frotheroe, Newport."—It would be useless for you to acquire, or attempt to acquire, the Russian language. French is the chief medium of business as well as polite intercourse in St. Petersburg. English is pretty generally cultivated amongst men of business; but we would commend you also to acquire a thorough knowledge of French, without which you would be considered underbred and unfit for polite society.

"Mr. F. Jermingham, Dublin."—Crystal varnish is thus made:—Procure a bottle of Canada balsam, draw out the cork, and set the bottle at a little distance from the fire, turning it round several times, till the heat has thinned it; then have something that will hold as much as double the quantity of balsam; carry the balsam from the fire, and, while fluid, mix it with the same quantity of good turpentine, and shake them together until they are well incorporated. In a few days the varnish will be fit for use, particularly if it be poured into a half-gallon glass or stone bottle, and kept in a gentle warmth. For maps, prints, charts, drawings, paper ornaments, &c.

"Mr. Charles Duaneing" will find a very interesting paper on the theory of etherification in the April number of "The Quarterly Journal of the Chemical Society."

"Mr. N. Dowling."—Practically there may be said to be no antidote to arsenic. It is true that the hydrated oxide of iron, if taken immediately after the poison, moderates its effect; but, inasmuch as the hydrated oxide spoils on keeping, and must be made when wanted, we are justified in banishing it from the lists of practical antidotes. Oxalic acid in a dose of a few drachms will kill in ten minutes, but oxalic acid may be taken in much larger doses with perfect impunity if a draught of chalk and water be given immediately afterwards. Oxalate of lime is not poisonous: if it were, rhubarb, which contains much oxalate of lime, would not be the innocent medicine we find it to be.

"Inquirer" wants to know why it is that grape juice only makes good wine. The reason is that the alkaline salt in grape juice is chiefly bitartrate of potash, whereas the alkaline salts of most other juices are malates and acetates. Now, as soon as the saccharine part of grape juice changes to alcohol by fermentation, the bitartrate of potash, not being soluble in alcohol, deposits; but as for the malate and tartrate of potash, these salts are soluble in alcohol, and hence are never deposited; consequently vegetable juices which contain these salts always retain their produce, and no addition of sugar can disguise the harshness which they produce.

"Quis quis" should procure "Rose's Analysis," translated by Dr. Normandy; also "Flatner on the Blowpipe."

"A Chemical Amateur."—The purest carbonate of potash is obtained by the immoderation of bitartrate of potash, commonly called cream of tartar.

"Mr. E. Peters, Exeter."—Locatelli's Balsam is thus prepared:—Take 3½ of hog's lard, 3½ of yellow resin, 3½ of olive oil, 3½ of Venice turpentine, 3½ of yellow wax, 3½ of dragon's blood; melt by heat, and make an ointment; or, leave out the resin and the lard, and use alkanet-root, or red sandal-wood, to colour it; and mix with conserve of roses, for coughs.

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TESTIMONIALS.

From JOSEPH HENRY GREEN, F.R.S., President of the Royal College of Surgeons, London; Senior Surgeon to St. Thomas's Hospital; and Professor of Surgery in King's College, London.

I have made trial of Mr. Franks's Solution of Copaiba, at St. Thomas's Hospital, in a variety of cases of discharges in the male and female, and the results warrant my stating, that it is an efficacious remedy, and one which does not produce the usual unpleasant effects of Copaiba.

(Signed) JOSEPH HENRY GREEN.

Lincoln's-inn-fields, 15th April, 1835.

From BRANSBY COOPER, Esq., F.R.S., one of the Council of the Royal College of Surgeons, London; Surgeon to Guy's Hospital, and Lecturer on Anatomy, &c.

Mr. Bransby Cooper presents his compliments to Mr. George Franks, and has great pleasure in bearing testimony to the efficacy of his Solution of Copaiba in Gonorrhoea, for which disease Mr. Cooper has prescribed the solution in ten or twelve cases with perfect success.

New-street, April 13th, 1835.

From H. A. CÆSAR, M.D., Surgeon, Professor of Anatomy in the Cork School of Medicine and Surgery; late President of the Hunterian Society of Edinburgh, &c. &c.

I have frequently prescribed Franks's Specific Solution, and deem it a valuable remedy in cases where Balsam of Copaiba may be prescribed with propriety, and have no hesitation in stating it is superior to any other preparation of the Balsam. (Signed) H. A. CÆSAR, M.D.

South Mall, Cork, Nov. 9th, 1841.

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From Messrs. BROWNE and WINGROVE,

GOLD-REFINERS, LONDON,

30, Wood-street, Cheapside, London,
24th January, 1850.

Sir,

(Copy.)

Having had in use for the last three months vessels lined with Gutta Percha for the reception of dilute Nitric Acid, we beg to state that in every respect the Gutta Percha is as good and as firm even as the first day it was used, and so highly satisfied are we of its valuable properties in resisting the action of this description of acid, that it is our intention to adopt it generally for every description of article or vessel to which we can apply it in our process of refining. Before we had fully made up our minds for introducing Gutta Percha into our Works, we submitted it to the severe test of a twelvemonth's trial in strong nitric acid, when the surface of the Gutta Percha was injured, while the interior was sound.

We have not the least doubt of its powers in resisting the action of dilute nitric acid such as we use, and that it can be extensively and profitably employed by us for this purpose.

We remain, Sir,

Yours obediently,

To Mr. Statham,
Gutta Percha Company.

BROWNE AND WINGROVE.

Anxious to ascertain the DURABILITY of Gutta Percha as a lining for Acid Tanks, a second application was made to Messrs. Browne and Wingrove (after the Tanks had been in use about fifteen months), and the following reply was received:—

(Copy.)

GENTLEMEN,

30, Wood-street, Cheapside,
27th November, 1850.

In answer to your inquiry with regard to our experience in the use of Gutta Percha, and whether it meets with our expectations, we have to return our most unqualified approval, both as to its capabilities and adaptation to our uses. We are highly satisfied with the article, and find it much the cheapest and safest we have hitherto employed. With regard to the specific gravity of the Acid to which the Gutta Percha is exposed we have never tried it, but the liquid contains near upon one-fifth of Acid at a temperature of 90 or 100 degrees.

We remain, Gentlemen,

Yours obediently,

BROWNE AND WINGROVE.

From Messrs. E. and J. STURGE,

CHEMICAL WORKS, BIRMINGHAM.

Birmingham, November 25th, 1850.

(Copy.)

In reply to your inquiry we are glad to record our continued satisfaction in the use of Gutta Percha for Tubing, Carboys, and other vessels; after more than twelve months' constant use, we are unable to trace the slightest action of Muriatic Acid upon them.

As far as our experience has yet gone, the material is equally proof against the corrosion of strong Alkalis, and also Sulphuric Acid, except at a high density.

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VOL. I.

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Assurances effected upon the participating scale, or, if preferred, upon a lower scale, without participation in the Profits.

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Persons Assured so as to be entitled to the Amount of the Policy, either at a given age, say 60, or upon their death, should it occur previously to such age; thus, by the investment of a small portion of their incomes, securing a provision for themselves in their old age, or for their families, should they die before the specified period.

Persons Assured with this Company may reside in any part of Europe, without extra charge; and, if they have occasion to proceed to any other part of the world, can keep up their Policies upon payment of an increased rate, commensurate with the risk incurred; which extra rate will cease upon their return to Europe, in a good state of health.

No extra Premium charged on the lives of Military or Naval men, unless in actual service.

Whole-world Policies are granted to persons assuring the lives of others on payment of an extra rate.

No attestation or entrance fee required, nor any charge made for the Policy beyond the amount of the stamp.

Parties desirous of discontinuing the payment of their Annual Premiums may dispose of their Policies to the Company, for a sum of money payable immediately; or, on surrendering them, may obtain a new Policy,

without any further Annual Premium, for a sum to be agreed upon, payable at the death of the life assured. The person to whom such new Policy is granted may be entitled, in respect of it, to participate or not in the profits to be periodically distributed.

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Every pains taken to investigate the state of health of the Assured before the proposals for Assurances are accepted, so as to avoid disputes or litigation after death.

Every facility afforded to persons assuring the lives of others, in order to render such Policies effectual securities.

Claims paid three months after satisfactory proof of death, or earlier, upon rebate of interest until the specified time of payment.

The Company purchases contingent or reversionary Property, grants immediate Survivorships and deferred Annuities, endows Widows and Children, and undertakes all risks contingent upon the duration of life.

Policies which have lapsed for non-payment of Premiums renewed upon payment of a fine; satisfactory proof being given respecting the health of the party.

H. D. DAVENPORT, Secretary.

Gutta Percha Carboys. The Gutta Percha Company have been favoured with the following letter from

MESSRS. JAMES MUSPRATT AND SONS, OF LIVERPOOL.

(Copy.) Liverpool, 8th September, 1850.

Gentlemen,—In reply to your favour of yesterday, we give it as our opinion that cool Muriatic Acid has no effect on the Gutta Percha. We have now had it in use for nearly a year, and we have no doubt, that in a short time, nothing but Gutta Percha will be used for conveying Muriatic Acid. For, although rather expensive at first, it soon pays for breakage and baskets of glass carboys.—Yours truly,

JAMES MUSPRATT AND SONS.

Every information may be had from the GUTTA PERCHA COMPANY, Patentees, 18, WHARF ROAD, CITY ROAD, LONDON.

Noirsain's Ventilating Grates and Stoves.—A long sought-for desideratum at last obtained. Great Economy in Fuel.—entire Prevention of Smoking in Chimneys.—and Perfect Regulation of the Temperature of Rooms, effected by the new Ventilating Grates, which may be applied to any fire-place.

M. NOIRSAIN solicits the attention of the public and scientific men to his patent apparatus,—the utility and superior advantages of which will be satisfactorily demonstrated at his Depot, 131, Regent-street, to any visitor. The highest testimonials given. Prices, from two guineas upwards.

Superior Hosiery for Family Use, in every descrip-

tion and variety for the current season, possessing elasticity and durability with comfort and economy, at POPE and PLANTE'S, 4, Water-loo-place, Pall-mall. Also, ELASTIC STOCKINGS and KNEE-CAPS, for various veins and weakness, on a new principle, which are pervious, light in texture, and inexpensive, yielding a permanent, efficient, and unvarying support under any temperature, without the trouble of lacing or bandaging. Also, Elastic Net Corsets, of the same beautiful fabric. Instructions for measurement and prices on application, and the articles sent by post from the Sole Manufacturers, Pope and Plante, 4, Water-loo-place, Pall-mall. See specimens at the Great Exhibition, Class 20, No. 6.

Lamplough's Effervescent Pyretic Saline.—Dr.

Prout has characterized the discovery of it as apparently unfolding the germs of immense benefit to mankind, certainly of importance equalled only in the annals of medicine by those of the illustrious Harvey and Jenner.

To the intelligent but uninitiated in the art and mystery of medicine it is merely necessary to recal the fact that at one period all parts of the body were in a fluid state, and daily and momentarily since have derived their nourishment and support from the vital current—the necessity of keeping that fluid supplied with the stimulus which is the true cause of its action is most important, and must be apparent to all.

Dr. Yeoman, speaking of the Pyretic Saline, in the *People's Medical Journal*, 29th April, 1851, says, "For a cooling, refreshing, and wholesome spring or summer beverage, we know of nothing better than a tumbler of fresh water and a teaspoonful of this preparation. We speak from proved and personal experience, and cordially recommend our readers to test it in like manner."

Those who from choice drink water, or from necessity take that which has filtered through chalk, should use frequently the Pyretic Saline, to prevent the injurious consequences arising from its being surcharged with that substance. It has been proved, beyond all doubt, that these Salines are the means Nature uses to hold in solution the lime necessary to the formation of bone in the body,—hence a deficiency will account for gout, gall stones, and other painful affections.

In connection with these facts it is necessary to associate the name of LAMPLOUGH, Chemist, 88, Snow-hill, London, whose reiterated attempts during past years have been eminently successful in manufacturing the Pyretic Salines in an agreeable, cheap, and efficacious form, suited to all constitutions; for, like natural food, they assimilate with it, and are taken up by the absorbent vessels, diffusing themselves again through the system, thus supplying the continuous waste of natural secretions, however great or varied they may prove.

Prepared only at the Laboratory, 88, Snow-hill, and 1, New Farringdon-street, London. Established 1761.

ON AGRICULTURAL CHEMISTRY.

By M. P. JOIGNEAUX.

(Continued from page 24.)

Magnesia.—Magnesia is a substance the function of which, so far as relates to agriculture, is very ill understood. It is found in combination with carbonic acid in the greater number of calcareous soils, but in quantities exceedingly small. Nevertheless, it is important to be able to recognise its presence, for, if it be true even that its presence does neither good nor harm whilst alone, thus much is certain, that magnesia, when brought into combination with lime, proves very injurious in a soil. Magnesian lime preserves its causticity for a much longer period than lime of any other description: sometimes, indeed, it acquires such causticity as to prove altogether mortal to live vegetables; but, so soon as the associated magnesia becomes completely turned into carbonate, then the lime is no longer to be feared. It is always desirable, then, before using lime as a manure, to make ourselves acquainted with the amount of associated magnesia.

Pure magnesia is white, soft to the touch, inodorous, and almost totally devoid of taste; but these characters will not enable the agriculturist to distinguish it when present in magnesian limestone. He should pour upon the lime to be examined a little muriatic acid diluted with water, agitate the mixture until combination ensues, then pour upon it a solution of ammonia, and, lastly, of oxalate of ammonia. The lime will be precipitated. The supernatant liquor now being decanted should be evaporated to dryness and calcined, when if magnesia be present it will be found in the crucible.

Vegetable and Animal Substances.—All soils contain more or less of animal and vegetable substances, either decomposed or in process of decomposition. These substances, to which the generic term humus is applied, constitute the greater part of the productive vegetable layer, and, on penetrating into the subsoil, we find this humus either to be altogether absent, or, if present, in such small quantities that it may, for all practical purposes, be altogether ignored. Vegetable and animal debris, or detritus, are the inevitable result of decomposing animal and vegetable bodies dying and putrefying in the soil. Their proportion naturally depends in great measure on the quantity of farmyard manure employed. Nothing is so easy as the detection of these organic debris. Take a few handfuls of the soil to be examined, place it in a crucible or a ladle, apply heat and stir it, when there will result charcoal; rendered quite manifest by its distinctive black colour. If any portion of these debris be of an animalized nature, there will also result from this operation a peculiar empyreumatic smell, owing to the development of ammonia.

Oxides of Iron and of Manganese.—The greater number of soils contain, in addition to the materials I have already named, oxide of iron, and oxide of manganese. Oxide of iron, known by the common appellation of *rust*, has the property of communicating a red or tawny colour to soils which contain it in abundance; but when it exists in small quantity, and when its presence is not thus indicated by colour, one must naturally have recourse to chemical analysis for verification of its presence. It is no good to use the magnet as a means of discovering this combination of iron, for peroxide of iron is not magnetic. The soil should be acted on by nitro-muriatic acid; and ammonia or potash or soda, whichever you like, should then be poured in, when the peroxide of iron will immediately be precipitated, under the form of tawny-red flocculi. If the preceding experiment be not considered enough, take some of the fluid into which you have not poured any alkali, throw into it some blood-serum, and afterwards one of the three alkalis, and the peculiar tawny-red precipitate will, under these circumstances, not appear. By these two characters the presence of peroxide of iron in soils may be inevitably discovered; but a simpler means of demonstration yet consists in pouring into the solution a little ferro-prussiate of potash, when, if iron be present, there will immediately be obtained a quantity of prussian blue.

Should you now wish to determine the existence of oxide of manganese, which, if the solution had contained any, would

have been precipitated with the oxide of iron,—pursue the following course:—Collect the precipitate on a filter, and wash it, during which operation the oxide of manganese will assume a colour of brownish black. This analysis, however, is devoid of any practical interest, and therefore we will take care not to lose ourselves unnecessarily in the depths of analytical chemistry. Whether there be or be not oxide of manganese, the effects of the soil will be the same, this substance being altogether devoid of influence on the vegetable economy. Although I have thus given precise directions for the discovery of the various constituents of soils, and although the methods of analysis appear very simple, it would be folly to argue that mere description is enough. An analytical chemist is not made by listening to lectures or by reading, but by actual practice in the laboratory. I will, therefore, proceed to offer some general remarks concerning manipulation, which being discussed, you will be in a condition to discover the constituents of any soil whatever.

Let me suppose, then, a pound of soil the composition of which we are desirous of learning. We place this given quantity in a glass vessel, and we expose it to a graduated heat, increased with precaution, until all the water contained in the soil has been totally dissipated. When we observe that no more vapours arise we weigh the soil, and all that it is now less than a pound represents the amount of water that it originally contained. But the soil must contain a considerable quantity of water for the loss thus spoken of to be very sensible.

As soon as desiccation has been thus completed we heat the soil to redness, stirring it assiduously all the time with a metallic rod or spatula, until all the charcoal which it yields becomes so completely calcined that not a trace of it appears. We then weigh the matter once more, and the difference thus established makes known to us the weight of all the volatile and combustible substances, vegetable or animal, contained in the sample of soil under analysis. This being done, we allow the mass to cool in contact with dry air; we remove the contents of the iron vessel and put it into a vessel of glass, in order that it may be acted upon by dilute muriatic acid, which would have attacked the iron, but will not attack glass. Almost invariably when thus treated an effervescence results, dependent on the escape of gas. We wait until this effervescence has finished; allow the mass to settle, and then pour off the liquid which floats above, in which will be found all the calcareous matter which the soil might have contained. It follows, then, that, if we wash dry and weigh the insoluble matter, its loss of weight will correspond with the amount of calcareous matter it contained, at least approximately. We now have to determine the amount of silica and alumina. This is easy enough; all that is necessary being to heat the mass with dilute muriatic acid, and stir it well; when all the sandy or siliceous matter will sink first of all to the bottom of the vessel, in such a manner that the supernatant portion being poured off will contain all the alumina. The deposited siliceous sand we dry and weigh; then we add to it the weights of the different bodies already obtained; and if, for example, we find that the total weight amounts to three quarters of a pound, we say that the alumina amounts to one quarter of a pound, seeing that we operated upon a pound of soil.

This method of quantitative analysis is very far from rigorous, but it has the merit of being sufficiently accurate for all agricultural purposes. I have purposely omitted to give directions concerning carbonate of magnesia, oxide of iron, and oxide of manganese, of which it suffices to determine the presence qualitatively, and of which the quantitative analysis would be totally useless to cultivators of the soil. Let us remember, then, as practical men, to confine ourselves to a practical examination of substances which really affect the fertility of soils, that is to say, of carbonate of lime, alumina, silica, and animal and vegetable matters; let us learn how to separate them one from another, and to obtain at least an approximative result so far as relates to them; and let us ever remember that the productiveness or nonproductiveness of a soil depends on the preponderance of one of these substances over the other.

Thus we have already made a great advance in the study

of agricultural science; and now the principal constituents of soils being known, as well as their individual characteristics, we are in a position to make up artificially any want indicated to us by analysis. If it be too cold, we know this depends upon an excess of aluminous or argillaceous matter; if too hot, this depends either on the presence of too much carbonate of lime, or on the nature of the subsoil; if too poor, we know that this quality depends upon its superabundance of sand and lack of humus. All this being known, is it impossible, think you, to warm up a soil which is too cold, to cool one that is too hot, to enrich one that is too poor? No; all this is far from impossible; but, before attempting this amelioration, the cost of doing so should ever be considered. It often occurs that a result which, chemically speaking, is quite possible, becomes altogether impossible when considered according to the bearings of practical finance. This fact the chemist should lose no opportunity of inculcating, for much inquiry has arisen from its not being fully appreciated by the practical man. The chemist's function is to deal as a scientific man with the question of possibility, the agriculturist must deal with it in another way.

We speak of improving such and such a soil, but the term altering its composition would more clearly express the true state of the case. In the greater number of cases, and especially as regards soils adapted for the culture of the cerealia, we ought to take as our model the soil which contains pretty nearly equal parts of carbonate of lime, alumina, and silica, and one-fortieth part in volume of organic debris. A soil thus composed is extremely favourable to the cultivation of cerealia, provided only it have the requisite depth.

The agriculturist may always consider a soil of this composition to be normal, and furnishing a standard with which all other soils may be compared, for the purpose of making up by addition whatever constituents they may be in want of for bringing them up to the normal standard.

Improving or amending agents are entirely different from manures, not of themselves furnishing any aliment to vegetables, but offering a space in which manures, the real alimentary food of roots, may be deposited.

(To be continued.)

PROGRESS OF SCIENCE AT HOME AND ABROAD.

TRANSACTIONS OF SOCIETIES, COMMUNICATIONS, &c.

PARIS ACADEMY OF SCIENCES.

Sitting of Aug. 11.

M. Ch. Dupin exhibited a portion of the cable containing the wires to be employed in forming the telegraphic communication between France and England. In the centre of the cable are four wires, each wire wound round with gutta percha, and then with galvanised iron. The academy listened with feelings of considerable interest to the interesting communication of M. Dupin.

M. Dumas read a communication relative to the researches of M. Bonis on the composition of *Ricinotamide* and the production of cenanthylic alcohol, two near compounds derived from the action of ammonia on castor oil; and M. Chevreul read a communication on the researches of M. St. Erre, professor of chemistry at the Faculty of Sciences, Besançon, on the action of nitrate of potash on nitrate of cobalt; but the late hour at which we received our Paris correspondence prevents us doing more than refer to the above at present, which will receive a more detailed notice in our next.

CHLOROFORM USED AS A SOLVENT IN THE MANUFACTURE OF ATROPINE.

M. Rabourdin, an apothecary of Orleans, has discovered that chloroform is a remarkably good liquid for obtaining by digestion the active principle of belladonna. For this purpose either the juice of fresh belladonna heated so as to

separate the albuminous portions by coagulation, or dry belladonna, or the extract of the plant, may be acted on by chloroform in the following manner:—

To 1000 grammes of the purified belladonna juice, or a corresponding quantity of aqueous solution of the extract, add 4 grammes of soda and 30 grammes of chloroform; shake all these well together in the cold for the space of about one minute. Now let all remain at rest for about half an hour, at the end of which time the greenish solution of atropine in chloroform may be easily poured off by decantation from the sedimentary portion.

The solution then obtained is next to be put into a retort and exposed to the heat of a water bath, by which means all the chloroform is distilled over, and atropine in an impure condition remains. This latter is now to be dissolved in water slightly acidulated by sulphuric acid, and filtered, by which means all the atropine will be obtained in the filtrate, and a greenish mass will be left behind.

If now the acidulated solution of atropine be treated with carbonate of soda in slight excess and rectified spirit, a tolerably pure solution of atropine will be obtained, from which the alkaloid can be separated in the form of beautiful acicular crystals by evaporation.

In this way 30 grammes of belladonna extract yielded 16 grammes of atropine.

CRITIQUE ON A COMMUNICATION OF MM. GOSKYNski AND SELMI ON THE SUDDEN CRYSTALLIZATION OF SATURATED SOLUTION OF SULPHATE OF SODA, ON THE CONTACT OF ATMOSPHERIC AIR.

By M. LOEWELL.

On the 12th of May last M. Goskynski presented to the academy a note *On the Theory of the Solidification of Concentrated Solution of Sulphate of Soda in Water, on Contact with the Air*. After the experiments detailed in this communication, M. Goskynski arrived at the conclusion that the rationale of the atmospheric action in effecting crystallization of the solution was due to the fact that, on striking rapidly the surface of the liquor, it dissolved a notable amount of aqueous vapour, and therefore, by concentrating the surface of the liquid, it produced a development of crystals, which, acting as so many nuclei, determined the crystallizing action throughout the whole mass.

"Some facts which I have observed," remarks M. Loewell in a letter to the Paris Academy, "are altogether opposed to the experiments of the gentlemen above mentioned. I have determined that concentrated solutions of sulphate of soda placed boiling into phials, and put underneath bell glasses along with quicklime, remain for months together in the state of supersaturation, without giving rise to a crystalline formation. More than this, even when phials containing a boiling saturated solution of sulphate of soda are put under very small bell glasses along with chloride of calcium, they gradually lose a part of their water, and deposit small crystals of sulphate of soda containing 7 HO, without, however, losing their condition of supersaturation, and assuming the state of solid crystals containing 10 HO, as is immediately found to be the case when the bells are suddenly removed, even although the surrounding atmosphere be moist."

QUANTITATIVE DETERMINATION OF IODINE IN ORGANIC SUBSTANCES.

By M. RABOURDIN.

Starch, it is well known, serves as a very effectual means of qualitatively determining the presence of iodine, but is totally inapplicable to effect the quantitative determination of the same. The result of M. Rabourdin's experiments on this subject tends to prove that chloroform is an admirable agent for this purpose, being competent to determine one part of iodine in a hundredth-thousandth part of a liquid containing it.

If 10 grammes of any liquid containing 100000 of its

weight of iodine be treated with 2 drops of nitric acid, 15 or 20 of sulphuric acid, and 1 gramme of chloroform, and agitated, it assumes a distinct violet colour.

M. Rabourdin, who first noticed this peculiarity, has employed chloroform as a means of quantitatively determining iodine in organized substances; for example, cod-liver oil. He takes about 50 grammes of cod-liver oil, 5 grammes of hydrate of soda, dissolved in 15 grammes of water, and shakes the whole well together. The mixture he now pours into an iron ladle, and by the application of heat reduces the contents to a cinder. The latter is now treated with a very small amount of water, filtered, and incorporated with 10 drops of mixed nitric and sulphuric acid. To this mixture 4 grammes of chloroform to be added, well incorporated, and thus allowed to stand at rest, when the chloroform, tinged of a violet colour, sinks to the bottom. The supernatant liquor is now to be poured off, and the iodized solution of chloroform well washed with water for the sake of purification. M. Rabourdin judges of the quantity of iodine present by the tint of violet which the chloroform thus treated assumes.

CHEMICAL EXAMINATION OF THE RESIN OF JALAP.

By B. SANDROCK.

This examination may be regarded as a continuation of that undertaken in 1844 by Dr. G. A. Kayser, who, as well as B. Sandrock, chose for the subject of his analysis the common jalap tubers, which were collected, according to Schiede, on the eastern declivity of the Mexican Andes in the neighbourhood of Chiquiquilaco. The samples operated upon were, indeed, all of one species, which Professor Zuccarini, in honour to his friend Schiede, has named *Ipomoea Schiedeana*, and which has been called *Ipomoea Purga* by Schlechtendahl. The appellations *Purga de Jalapa* of Schiede, *Convolvulus Jalapa* of Linnæus, *Convolvulus Purga* of Wenderoth, *Ezogaonum Purga* of Lindley, are probably all synonymous of all and the same plant.

It is well known that the common resinous extract of jalap is resolved by the action of ether into two different resins, one of which is soluble, the other insoluble, in that menstruum, the latter amounting to 80 or 90 per cent. of the whole quantity; hence it is that the exceedingly purgative resin *Ipomoea orizabensis* is soluble in ether as well as in alcohol.

The object of Dr. Kayser's second inquiry relative to jalap resin was that kind which remained unacted upon by ether. This, after purification by means of charcoal, was easily reducible to powder, almost colourless, devoid of taste and smell, insoluble in ether, slightly soluble in alcohol, yielding a solution which reddened litmus paper. The addition of water to this alcoholic solution effected precipitation of the resin, in the condition of powder, easily soluble in caustic ammonia, and moderately soluble in acetic acid. Aqueous solution of caustic and carbonate of soda dissolved the powder very slightly in the cold, but with facility when aided by a sand heat, thus yielding an alkaline solution of the resin, from which the latter was easily susceptible of precipitation by the addition of an acid.

The ammoniacal solution of this resin possesses a clear brown colour, and may be obtained in a perfect state of neutrality by driving off the excess of ammonia. Hence the resin under question, like many other bodies of the same physical nature, is an acid; it differs, however, from other resinous acids in the circumstance that it is not precipitated from its neutral combination with ammonia by basic metallic oxides; at least Dr. Kayser could develop no precipitation by either nitrate of silver, sulphate of copper, acetate of lead, or chloride of barium; the basic acetate of lead, however, effected a flocculent precipitation. It appeared, also, according to Dr. Kayser's experiments, that the alkaline combination of the resin was not only soluble in alcohol, but also in water.

Hence it became a question of importance to determine whether the resin of jalap by entering into these combina-

tions lost any of its natural properties. With the object of arriving at a solution of this question he instituted several analytical investigations on the resin which was insoluble in ether, and on the combinations of this resin with oxide of lead, soda, &c., from which analysis he arrived at the following results:—(1.) That the resin in effecting its combinations with bases assumes into the composition of the resulting salt the elements of one equivalent of water. (2.) That, when this hydrated modification of the resin is rubbed with concentrated sulphuric acid, a carmine-red colour is developed, to which Dr. Kayser gives the name of *hydrorhodeoretin*, the term *rhodeoretin* having been previously given to a material of similar colour, produced by rubbing the non-hydrated resin with sulphuric acid. (3.) This *hydrorhodeoretin* possesses the following properties: it is similar to the original jalap resin in brittleness, friability, fusibility, and combustion. It is soluble in water and in alcohol, but not in ether. It is odourless, but possesses a slightly bitter taste.

The aqueous solution reddens litmus, becomes troubled by the addition of neutral metallic salts, but only precipitated by a solution of basic acetate of lead. Its alkaline combinations are not crystallisable.

Rhodeoretin being dissolved in absolute alcohol, and a current of dried hydrochloric acid gas injected up to the point of saturation, the solution assumed a dark yellow colour. Water being poured upon this solution effects the separation of an oily-looking liquid, having an agreeable odour, volatilizable by heat, insoluble in ether, and totally devoid of chlorine. By analysis it yielded the following as its constituents:—

Carbon	66.95
Hydrogen	10.67
Oxygen	22.38

100.00

Dr. Kayser names this product, which is evidently made up of the elements of rhodeoretin and alcohol, *Rhodeoretinol*. There also arose through the preceding operation another product, which, after the separation of excess of hydrochloric acid, possessed a sweet taste, was soluble in water, and indeed presented the other characteristics of glucose. The resin, soluble in ether, possessed, according to Dr. Kayser, the following properties:—It manifests in a high degree the peculiar disagreeable taste of jalap itself, its solution reddens litmus, and leaves a greasy stain on paper; it is insoluble in acids, but tolerably soluble in caustic alkalis. If the alcoholic solution of this resin be allowed to remain for a considerable period in contact with water, little crystals are deposited. The addition of acetate of lead, moreover, to this alcoholic solution effects a deposition. When heated on platinum foil the resin melts, and burns with a clear flame. These properties indicate that jalap resin, soluble in ether, should be ranged amongst the fatty acids.

Dr. Kayser subsequently analyzed the *Ipomoea orizabensis*, and extracted from it a substance in many respects conformable with *Rhodeoretin*, and to which he applied the term *Para-rhodeoretin*.

M. Sandrock limited his investigations to the *Knollige jalapa*, which yielded him 15 per cent. of resin, and which, therefore, must have been a very rich variety. When purified by animal charcoal this resin possessed a yellowish colour, and also the peculiar taste and smell of jalap. This resin was found to be not quite insoluble in boiling water, and the aqueous solution had the property of reddening litmus, and contained $\frac{1}{30}$ th part of resin. Oil of olives, of turpentine, and of lavender, were found incapable of dissolving the resin; but ether dissolved of the resin about 10 or 12 per cent.

M. Sandrock confirmed the results of Dr. Kayser, already detailed, and arrived at the general conclusion that jalap resin consists of three different resins, of which the first is soluble in ether; and the second, insoluble in that liquid, but soluble in alcohol, is precipitable from its alcoholic menstruum by neutral acetate of lead; whilst the third, soluble also in alcohol, is not precipitable by the same means.

NEW WAY OF EFFECTING THE PRESERVATION OF PUTREFACTIVE BODIES.

By ED. ROBIN.

It is well known that ether, alcohol, pyroxilic spirit, chloroform, and certain of the hydrocarbons, have the property of averting putrefaction. M. Robin advises the following method of employing these agents:—He encloses the meat or other substances to be preserved in a glass case, along with a sponge containing the preservative liquid, which latter is continually evolved in a vaporous condition, and exercises the preservative agency. In this way the vapours of hydrocyanic acid are found to be very efficacious.

STRYCHNIA EMPLOYED IN THE TREATMENT OF CHOREA.

M. Trouseau has published a memoir recapitulating the various cures he has effected in chorea cases by the administration of strychnia, of which memoir the following is an abstract:—

M. Trouseau uses the syrup of sulphate of strychnia containing 5 centigrammes of single syrup (1 grain to 2000). The method which he follows is to administer gradually increasing doses. According to the child's age he begins with two or three teaspoonfuls of the syrup for the first day, and the number is daily increased up to six. A dessert-spoonful is then daily substituted for a teaspoonful; when six have been reached, tablespoonfuls are in like manner substituted. The number of tablespoonfuls should be augmented beyond six up to seven, nine, or ten, but more slowly, and at intervals of one or two days. These quantities should be regularly divided between the twenty-four hours, so that a portion may be taken every four hours. The dose should be increased so far as to produce tetanic rigidity, and this should be carefully watched for by persons about the patient. When this appears the dose must not be increased; and the quantity to be continued should be somewhat diminished. In general the daily dose of the medicine varies from two to ten centigrammes ($8\frac{1}{2}$ gr. to ias gr.).

One of the first symptoms of the tetanic effect of the strychnia is itching of the hairy scalp and skin. The masseter muscles are first attacked; and, when the patient complains of difficulty in opening the mouth, the dose should be continued, but not increased, as the medicine has a tendency to accumulate its effects. Sometimes there will be after some rigidity an interval of two or three days without any marked change, then tetanic symptoms will set in with alarming severity, as if the medicine had been accumulating. In other cases, the dose being the same, the effects will be much greater on one day than another; this may probably be due to meteorological influences. These irregularities ought to be borne in mind by the physician.

Sometimes the dose is not arrested when the first tetanic symptoms appear. The masseter muscles then become so rigid as to impede the speech; next the patients are often seized with sudden cramps of the legs; and when they attempt to walk the body moves forward, while the legs remain fixed, so that they fall to the ground. In other cases, instead of persistent tetanic rigidity, there are sudden contractions, so that the patients are thrown down by the rapid action of the triceps femoris muscle. The rigidity, and especially the contractions, appear when the patients make any sudden movement. The medicine should be continued some days after the choreic symptoms have disappeared, in order to prevent relapses. In above ten years M. Trouseau says he has seen no ill effects produced by the use of strychnia in the way he describes, and he believes it to be a safe and efficacious remedy, if carefully and properly administered.

RECIPE OF PATCHOULI.—Indian patchouli leaves 2 lb., rectified spirits of wine 9 pints, water 1 gallon; macerate for a week, frequently shaking the vessel, then distil over 1 gallon.

Chemical Record

AND

DRUG PRICE CURRENT.

SATURDAY, AUGUST 16, 1861.

VESTED RIGHTS AND DRUGGISTS' ASSISTANTS.

THE way in which "vested rights" are usually dealt with in acts of Parliament is, to our untutored eyes, not unlike a sort of recognition of the natural supremacy of *might over right*. The law is made to say, "To him that hath shall be given; and from him that hath not shall be taken away, even that which he hath." When the Pharmaceutical Society was originated, the apprentices and assistants were appealed to for support. It was for their benefit, mainly, that the disinterested projectors had left their galipots and their ledgers to "take sweet counsel together" in Bloomsbury-square. But, as month after month rolled on, and nothing more appeared concerning the assistant than a recommendation to study Fownes and Redwood;—in reply to one, a caustic piece of sarcasm;—silence to another, and the cheering news that the council could not condescend to entertain the question of early closing, to keep up the expectations of a third—the youths with white aprons began to repine, and even ventured to forward a memorial of their grievances to the authorities of state.

How very simple some people are! To suppose that a meeting of the assistants of the London druggists should be thought worthy of notice by their employers:—that their memorial would be taken into consideration—that such an insignificant fact would be ever referred to at the annual meeting of the society, or recorded in the transactions! Why! might they not naturally have expected that a large portion of their subscriptions went monthly to purchase an organ which would carefully prevent the seeds of disaffection spreading into the provinces?

It was nothing more than fitting that a council which refused to entertain a memorial so unanimously conceived, and so respectfully worded, should procure a charter excluding the associates from all share in the management of the society to which they were called on to subscribe, and should more recently inaugurate a bill that would have the effect of subjecting them all to a compulsory examination before they could exercise the "art and mystery" which these, their masters had covenanted to teach them.

Fortunately for the assistants, Mr. Bell's *pill* has not gone down; or they would have been handed over *en masse* to their kind friends, the council in Bloomsbury-square. As it is, they have just time to call out that *their* premium has been paid—that they have "served their time"—and consequently are "free of the trade"—and that of their competency to make a pill or mix an electuary they can produce as good vouchers as Mr. Bell of his skill to frame a bill or cook an election.

But, seriously, we think those members of the trade who happen *not* to be in business, consequently *not* to be eligible for registration under the proposed Pharmaceutical Bill, have a strong right to complain of the arbitrary dis-

inction drawn between them and those who differ from them only in the mere accident of shop-ownership.

It may fairly be questioned whether it is right to make the bill so far retrospective in its operation as to include even those but recently apprenticed; but certainly there can be no question of the injustice of placing under a ban those who *have already served a regular apprenticeship*, and are, if their masters have done their promised duty, fit and ready to commence on their own account.

Why should the druggist *in* business, however ignorant, be registered as qualified; while the druggist *not* in business, however experienced, is rejected? If the man who has started as a 'plasterer's labourer near where we now write,* without qualification, is to be recognised on the faith of his *shop*, why should not the man who has duly served an apprenticeship be also recognised on the strength of his *indentures*?

Why, gentlemen, all this *ex post facto* legislation on those who, by entering years since into the business, have acquired, whether now exercising it or not, as real a membership, and as trustworthy an experience, as those who have had only more money, or more rashness, to commence sooner on their own account?

We speak in no spirit of hostility to the professed object of the bill; we only desire to see it cleared of any monopolizing tendencies, and expanded into a measure which shall deal out even-handed justice to *all* the existing vested interests in the trade.

THE TEETOTALLERS AND THEIR PHILOSOPHY.

In our last number we made certain comments that we felt the case to merit on the senseless enthusiasm of the vegetarians, and, collaterally, we offered a passing opinion on their brethren; the apostles of total abstinence from alcoholic liquors. It is as far from our desire as from our intention to class the two sects of enthusiasts in one category, or to award them each one equal meed of censure. The vegetarians we consider totally uncalled for by the existence of any vice parallel to drunkenness; and we believe their tenets, if rigidly carried out, would be productive of a vast amount of harm to the physical economy of man. As it regards the total abstinence sect, however, although there may be many opinions as to the innate propriety of its doctrines, viewed abstractedly, and without reference to the existence of a degrading vice—there can be none as to the amount of drunkenness it has been the means of suppressing amongst those who, without some powerful motive of enthusiasm, would have died as they had lived—in the degrading practice of intoxication. So far it is well; let the teetotal abstinence men have our unfeigned thanks; but when they take other ground, and, instead of limiting their enthusiasm to the function of reclaiming the drunkard, wage war against fermented liquors under any circumstances administered,—when propositions are advanced which to the half-informed seem to possess a chemical significance, and pass muster as expressions of universal law,—it behoves the exponent of chemical science to test them and see what they are worth.

The proposition, then, on which the teetotalers lay great

stress for demonstrating the impropriety of alcoholic ingestion is one first advanced by Benjamin Franklin, and allowed to pass current since his time for much more than it is worth.

This great man argued, it is well known, that the only nourishment derivable from beer was referable to the amount of infusion of barley which it contained; and hence he arrived at the conclusion that a far less extravagant way of ingesting an equivalent amount of nourishment consisted in drinking water and eating bread.

Now, it is evident that Franklin and his followers ignore the consideration of the only element with which they have to do; there is nothing said about alcohol—without the introduction of which into the expression, it may be proved that a person who ingests infusion of grain instead of bread is an extravagant man; but it cannot be affirmed that he is a drunkard.

The real question at issue is this, whether alcohol, in any form or any quantity, be conducive to the health and well-doing of man. This is the question broadly stated, and it will scarcely admit of being condensed in a narrower compass. It would be unfair, for instance, to limit the inquiry by the proposition, whether alcohol be or be not an aliment;—that is to say, whether it enters into the bones, muscles, tendons, and other portions of the body.

On this point physiologists are disagreed, as indeed they are with respect to water.

Any doctrines having for their object to prove the impropriety of fermented liquors by arguments relating to their non-nutrition are evidently inapplicable; since there is at least a parity of reasoning to advance for the non-ingestion of water.

The real point at issue, we repeat, is the innocuity of alcohol; and until it be determined in the negative,—until it be proved that alcohol, in every form, in any quantity, and under any circumstance administered, is injurious—the abstinence apostles have no right to impugn the practices of those who, without being drunkards in any sense of the word, use without abusing fermented liquors.

For our part, having devoted attention to the doctrines of teetotalism; alive to the good which the advocates of this doctrine have done, and therefore not disposed to be warped by any feeling of ill will, we arrive at the conclusion, not by the aid of theory alone, but after a review of facts, that those who practise total abstinence are to be regarded as individual sacrifices to the great principle of temperance; and that an universal repudiation of fermented drinks would not be good for the constitution of man.

REVIEW.

BABBAGE—ON THE EXHIBITION.*

We do not remember ever to have read a work that gave us an equal amount of pain. Under the guise, as its title imports, of dealing with the Universal Exposition, the author lets loose a withering volley of misanthropy against the ruling powers of his native land, and displays the hidden sources of feud, ill-feeling, and contention among men and classes whom the public innocently think to be elevated, by

* *The Exposition of 1851; or, Views of the Industry, the Science, and the Government of England.* By Charles Babbage, Esq., Corresponding Member of the Academy of Moral Sciences of the Institute of France. London: John Murray, Albemarle-street, 1851.

* Manchester.

virtue of their scientific abstractions, far beyond the petty jealousies and vulgar turmoil of this narrow world. Although the book of Mr. Babbage contains much that is worthy of his best fame, we are constrained to say, nevertheless, that, as an exposition of England's Great Exhibition, it is poor, meagre, and unpractical.

The work is ushered in by a short history of learned societies,—a kind of information not particularly well communicated, and in no way necessary to the subject matter which follows.

Twenty-four pages having been thus consumed, Mr. Babbage commences the real part of his subject by an account of the origin of the Exposition of 1851. Here again the author roams wide of his subject, and, instead of merely confining himself to the origin and history of the Exhibition, he expatiates on the sentiments which its progress caused to be expressed. Much of the chapter is instructive—a greater part is amusing; but, as a whole, it fills us with regret that a philosopher of such deep and original views as Mr. Babbage should have descended to the level of satire and caricature. This, indeed, is the objection we have to find with every part of his book:—the author's denunciation of men in power for their neglect of science is well merited; his irony is keen, his satire is exquisite; but ever and anon we remember how much the book belies its title—how far its author wanders from the end proposed. The wanderings of a Babbage could never be devoid of interest, but, highly attuned as our ideas of this justly-celebrated man have been, we grudge to awake from our reverie and discover him at the tenth-rate occupation of book-making.

Forgetting the name of Babbage, and forgetting the title of his book, the following description of some of the uneasy feelings conjured up by the proposed Exhibition are sufficiently amusing:—

"The Ministers could not of course commit themselves by publicly avowing their disapprobation of an undertaking commenced under such high auspices. It might, however, readily have been foreseen that they would be averse to such a scheme, because, whilst it was sure to give them a great deal of trouble, it would afford them no compensation in the shape of patronage.

"Those, however, who usually reflect and retail the opinions of the Government were by no means silent; at first it was said to be Utopian, then ridiculous, then, in the slang of official life, it was 'pooh-poohed'; at a later period, when great public meetings had been held, and when public dinners began to give it an English character, the best speech which has yet been made on the subject, containing the far-sighted views of a statesman, was ridiculed as full of German notions, by coxcombs whose intellect was as defective as their foresight, and whose selfishness was more remarkable than either.

"Another class of persons, the Belgravians, though actuated by the same motives, were induced to join in the outcry for other reasons. As soon as it became known that the locality of the building would be the southern side of Hyde-park, they represented that the park would be destroyed, and become utterly useless. As if a building covering twenty acres out of above three hundred and twenty could prevent the people from enjoying air and exercise on the remaining three hundred.

"Again, it was asserted that by cutting down a few trees within the limits assigned to the building the park would be desolated; the shady walks destroyed; whilst all the while there was a goodly stock of timber, old and young, abounding in the other three hundred acres. Before this absurd delusion could be removed from the public mind, all the plans were made specially to conform themselves to the enclosure of these miserable trees. It was not discovered until after the Crystal Palace was completed that several of them were on the verge of extinction, and that all would probably perish by exposure under such unusual conditions. Some of the most decrepit and most inconveniently situated trees have now been cut down.

"The Belgravians found out other causes of complaint. They could not tolerate the mass of plebeians of all nations who would traverse their sacred square, and they threatened to spoil the London season by going out of town. When it was suggested to them that in these days of agricultural distress, if they left town they might console themselves by letting their houses at a high price, they refused to be consoled.

"The Belgravians next consulted their 'medicine-men,' who, seeing that they wanted to be frightened, suggested to them that some foreigners were dirty—that dirt in some cases, causes disease. The Belgravian mind immediately made the inference that the foreigners would bring with them the plague; then they dwelt on sanitary measures, and on the danger to the public, until they themselves became nearly insane.

"It was then suggested that the foreigners might become assassins by night,—or take military possession of London by day. Their tradesmen too, who hated the scheme, and knew the humour of their customers, assured them that trade would be entirely ruined; whilst, at the same time, it was whispered that many of them had sent large orders to France for goods to be exhibited at the Crystal Palace, and afterwards to be sold to their capricious customers, either as French, or as English surpassing French, just as the whim of the moment might cause a demand for the one or the other.

"This opposition of the inhabitants of Belgravia increased as the preparations for the opening of the Exposition advanced. The working classes had been favourable to the scheme from the commencement, and a knowledge of its advantages seems to have advanced slowly in society from below upwards."

Now, having arrived thus far with Mr. Babbage—having scowled with him at the laches of the Ministry—having smiled with him at the vain fears of the inhabitants of Belgravia—we stop awhile in our mental career, and ask ourselves, as practical beings, what would Mr. Babbage have had? The Exhibition annoyed the Belgravians: would Mr. Babbage have had the Belgravians seem pleased? The Exhibition threatened to damage the individual interests of London tradesmen: would Mr. Babbage have had them appear content?

That individual interest should reign paramount is a law of human nature; and all that can be expected of a statesman or a philosopher to do is to find the resultant out of all these conflicting forces. Mr. Babbage is bitter, indeed, against the British legislative government. We own the justice of his attacks, and we trust to see the abuses of which he speaks remedied with time. Human nature is imperfect—man is guided by thousands of impulses warring with each other, expanding in a thousand different directions—hence we have no great faith in the absolute purity of political régimes; but where would Mr. Babbage have our legislators go for their lessons of pure governing morality—would he have them seek the classic shades of the Royal or the Astronomical Society? Would he have them drink deep draughts of ethical purity amidst the conclaves of those who trace wandering atoms to their sources; who measure the velocity of the sunbeam, or read the mysteries of the stars? Alas! if the revelations of Mr. Babbage be true, the feuds of philosophers are of the most repulsive kind—the feuds of politicians and diplomatists are matters of course—the world expects no other, and so the matter ends. The feuds of philosophers are suggestive of the greatest incongruity of elements; the soul, all glowing with fire of poetry, and attuned to the grand and beautiful, suddenly finds itself grovelling in a quagmire of human passions, frailties, and sins. The contrast is so painfully great that we mourn over the practical shortcomings of philosophy, and sink trembling down.

Mr. Babbage gives a chapter headed "Intrigues of Science," in which facts are disclosed which demonstrate that,

however bad our political governors may be, they certainly must not appeal to philosophers for a practical amelioration, by infusion of members from this class. In his work on the *Decline of Science in England*, published in the year 1830, the author furnishes his readers with a vivid exposure of the mismanagement of the Royal Society. His statement was verified by the testimony of Wollaston, of Young, and Herschel, and has been disapproved by none. Far from deeming his statement exaggerated, we believe Mr. Babbage has kept below the level to which facts would have justified him in raising his powerful voice. The mismanagement of the Royal Society is a matter of so much public notoriety, that men of real scientific attainments already hesitate to join it. As an example of the improper characters who find admission into its precincts, we could cite one—a graveyard sculptor—whom recent law proceedings have stamped as a liar and a cheat—one who never could write a letter in passable orthography, and whose only claim to fellowship of the Royal Society is the circumstance of his having been engaged in some friendly bill transactions with a third-rate metropolitan surgeon—but fellow of this society!

Mr. Babbage, in his present work, furnishes us with a very lamentable history of a feud in the Astronomical Society, in which the Rev. Mr. Sheepshanks figures most disadvantageously; and the result of which, according to our author, has been the swamping of his calculating machine.

In 1829, Mr. Babbage says—

"Sir James South was elected President of the Astronomical Society. It now appears, however, that, previously to this appointment, a party had been formed adverse to Sir J. South, which party, with the view of thwarting him, placed in the office of secretary the Rev. Richard Sheepshanks, Fellow of Trinity Coll., Cambridge.

"In March, 1831, the Board of Visitors of the Royal Observatory of Greenwich met at the Admiralty, to consider the propriety of separating the duties of Superintendent of the Nautical Almanac from those of Astronomer Royal. The new arrangement was advocated, amongst others, by Sir J. South, and after some discussion, in which Captain Beaufort and myself took part, it was ultimately carried. As we were leaving the meeting-room, Mr. Sheepshanks addressing me said, 'I am determined to put down Sir James South, and, if you and other respectable men will give him your support, I will put you down.' He at the same time told me he 'intended to put Captain Beaufort down.'"

The way in which these systematic puttings down were accomplished is then vividly laid before us by the author. Mr. Troughton, of the firm of Troughton and Simms, in the course of the year 1832, constructed a large equatorial mounting for his friend Sir J. South's twelve-inch object-glass. The instrument was an entire failure, and a temporary coolness arose in consequence between the very intimate friends Mr. Troughton and Sir James South. Hereupon, according to Mr. Babbage, the Rev. Mr. Sheepshanks, pursuing a course of deepest treachery, mixed himself up in the dispute, ostensibly for the purpose of effecting reconciliation, but really with the very different motive of fanning the angry flame. The real state of feeling between Sir James South and Mr. Sheepshanks being known to Mr. Simms, the latter gentleman told the reverend mediator Sir James South had declared that no person could have been fixed upon more obnoxious than himself (Mr. Sheepshanks). Notwithstanding which intimation he still persevered in obtruding himself into Sir J. South's observatory as the agent of Troughton and Simms, until it was at last discovered that no after contrivances or expense could correct the errors of an instrument itself radically defective in principle.

"It may readily be supposed that the continuance for months of these visits by Mr. Sheepshanks and Professor Airy, and the irritating correspondence consequent upon

them, which, though nominally that of Troughton and Simms, was really 'directed by' the Rev. R. Sheepshanks, destroyed all hope of a reconciliation. The parties then had recourse to the Court of King's Bench, and it was curious to observe the vigour and energy with which the Rev. R. Sheepshanks applied himself to the exercise of his earlier studies.

"Having volunteered his services to Messrs. Troughton and Simms, he wrote every letter for them during the subsequent lawsuit—he acted for them in all the various characters of 'friend' and adviser—of workman and agent—of attorney and counsel;—he made an affidavit in the case—became a witness himself—and undertook to intimidate witnesses on the opposite side.

"This latter performance is fortunately rare in England, and is so remarkable that it is necessary to give some account of his proceedings.

"Not wishing to become involved in so disagreeable a case, I had refused to be a witness on the part of Sir J. South. Having, however, had some conversation on the subject with the late Lord Abinger (then Mr. Scarlett), he represented to me that my evidence was essential for the justice of the case, and upon that ground I reluctantly waived my objection to appear as a witness.

"Having been examined in chief on the seventeenth day of the arbitration, I remained in the room a few minutes after the arbitrator had left it. The Rev. R. Sheepshanks, the only other person then present, addressing me said, 'It was necessary to discredit me because I had supported Sir J. South.' He added that 'he would, at a future time, attack me publicly on another subject, on account of the part I had taken in this matter.'

"The remembrance of his former threats more than four years before at the visitation at the Admiralty, added to the knowledge of the unremitting perseverance with which he had carried on his hostility to Sir J. South, satisfied me that it would be unsafe for the cause of truth, and possibly injurious to myself, if I were not to take measures for making known the nature of the weapons which the Rev. R. Sheepshanks was employing. As he had ventured, after my having given evidence on oath, to threaten me with injury, with the hope of inducing me to modify that evidence on cross-examination, it appeared to me probable that he might have been tampering with the evidence of other witnesses in the same cause, who, from their position or circumstances in life, might be compelled by the fear of his vengeance to shape their evidence so as to adapt it to his views.

"The Rev. R. Sheepshanks discovered on reflection no impropriety in this course of intimidating witnesses, or of attacking those who could not be induced to take up his own private quarrels. He thus defended both:—

"I think it allowable to throw down the gauntlet in this manner."

"I have another ground of dispute with Captain Beaufort, and certainly intend to put him down."

"The gallant admiral has survived many a dangerous day, and needs not the pen of a friend to protect his honest and well-earned fame.

"The reader may perhaps be astonished at the statement made in the preceding pages, and feel disposed to consider it an ex parte statement. It is entirely an ex parte statement: it is not necessary for its support that the reader should give credence even to that small part of it which appears to rest on my own evidence before the arbitrator. The whole of it is founded entirely on the testimony of the Rev. R. Sheepshanks himself. Every statement of those numbered from 1 to 24 was either elicited from him on his cross-examination, or, in the few instances in which the statement came from myself, its correctness was confirmed by his subsequent admission or restatement."

A very pretty revelation this to come from the pure and tranquil regions of philosophy! A very hopeful indication of the advantage our political legislators would derive from a closer study of the benign influences which philosophy scatters in the region of her votaries! A more degrading picture of human passion, envy, hatred, and malice, has

never come under our view than that presented by the short-hand reports of Mr. Sheepshanks' expression. In future parts of his volume Mr. Babbage draws a very vivid picture of the uneven justice with which men of science are treated by the Government. He shows how sadly the few scientific official positions open to philosophers are thwarted from their purposes, to suit the necessities of court intrigue; he shows how immeasurably inferior are the titular honours of science, in comparison with the unkindred subjects of law and war. He criticises with much truthful bitterness the ruse of the Whigs, who took great credit to themselves for throwing open the honours of the Bath to men of science, when in reality the modification of that order only contemplates the reward of Government employés. He sketches with master hand the absurdity of our Bishops shining resplendent with the emblematic bedizenings of the ranks of war.

All this is true, and comes commended to our best sympathies. Science has never yet been adequately appreciated or rewarded by our ruling powers; but we repeat the expression, accompanied by a bitter regret, that the disgraceful feuds of scientific men—their subservency to those in power—their jealousies—their tuft-hunting propensities—and their want of union—will, so long as human nature remains what it is, subject the votaries of philosophy to be oppressed and condemned by every Ministry—Whig, Tory, or Radical—on which may be imposed for the time the onerous charge of wielding the destinies of this great empire.

(To be continued.)

PRESTWICH ON THE LONDON WATER-BEARING STRATA.*

(Continued from page 59.)

With respect to the probable quantity of water which might be yielded in our metropolis by penetrating below the chalk formation, Mr. Prestwich quotes the French experiments for want of any English authority on the same subject:—

"Up to a late period all the numerous Artesian wells of Paris and its neighbourhood were confined to some of the water-bearing beds overlying the chalk, but the quantity of water from these sources having been found insufficient for some of the large public establishments, and the chalk itself in the Paris district not affording any supply of water, the municipality of Paris resolved to bore through that formation, and seek for water in the underlying deposits. Some precedents already existed for such an undertaking, as in many places nearer the borders of the chalk district, as at Elbeuf, Tours, and St. Quentin, Artesian wells had been sunk successfully through this formation.

"The works were commenced in 1833, at the abattoir of Grenelle, and were continued, but with several long interruptions, until 1841, when at the great depth of nearly 1800 feet the water-bearing strata were reached, and a column of water, capable of being carried to a height of 120 feet above the surface of the ground, was suddenly projected. The supply amounted to about 4,000,000 of litres, or 881,884 gallons in the twenty-four hours;—the temperature of the water being nearly 82° of Fahrenheit.

"M. Mulot informs me (April, 1850) that these conditions still remain unaltered.

"The strata traversed were as follows:—

	Feet.
"Drift,—Sand and gravel	38
Lower tertiary strata	115
Chalk with flints	1146
"lower	246
	1894

* *A Geological Inquiry respecting the Water-bearing Strata of the Country around London, with Reference especially to the Water Supply of the Metropolis; including some Remarks on Springs.* By Joseph Prestwich, Jun., F.G.S., Member of the Geological Society of France; Corresponding Member of the Royal Geological Society of Cornwall. London: John Van Noort, Paternoster-row, 1851.

Calcareous sandstone, clays, and sands,
ending with a bed of green-coloured
sand

256

1798

"This well furnishes a valuable point of comparison with regard to the results which a similar undertaking in the vicinity of London might give. The surface of the ground at the well is 102 feet above the level of the sea. The French geologists consider the sands from which the supply of water is obtained either as subordinate beds of the Gault, or as belonging to the lower greensand. They crop out in a zone of country about 100 miles eastward of Paris, and range along the segment of a circle, of which Paris is the centre, from between Sancerre and Auxerre, passing near to Troyes, thence by St. Dizier to St. Ménsould. The outcrop of this formation is continued some distance farther north; it is also prolonged beyond Sancerre, south-westward towards Bourges, Châtelleraut;—and then north-west to Saumur, Le Mans, and Alençon. But the superficial areas which it occupies in these latter districts do not appear to contribute to the water supply at Paris, for the axis of elevation of Mellerault (which, according to M. D'Archia, traverses the cretaceous area in a north-west and south-east direction from Normandy to Burgundy) must intercept the subterranean passage of the water from the district south of that line;—whilst on the north of Paris the anticlinal line of the 'Pays de Bray,' and some smaller faults in the Aisne, produce probably a similar stoppage with respect to the northern districts. The superficial area, therefore, from which the strata at the well of Grenelle draw their supplies of water forms, on the east of Paris, a belt stretching from near Auxerre to St. Ménsould. How far the more limited outcrop of those beds in Normandy contributes to this water supply is doubtful."

The necessity of economizing our space for the review of other works now lying before us renders it necessary that we should be brief with the production now under notice. Sufficient will have been said, however, to vindicate its high merit, and to recommend it to all who are interested in the present question of metropolitan water supply. We cannot take our final leave of the volume without calling attention to a valuable chapter towards the end of the volume, having for its object the supplying details to practical men of the expense attendant upon deep well-boring. Altogether, this is a very well-digested volume, admirably adapted to fulfil its proposed end, and should be found in every library of practical science.

Messrs. Pope and Plante have sent for our examination a very elegant and useful textile fabric of indiarubber and silk, and designed for the purpose of adding strength to the annular ligament of the wrist. This application of the elastic tissue must prove exceedingly valuable to all whose occupations call for great motion of the wrists or fingers. The same tissue is also formed into corsets, which, being devoid of bones or busks, enable the wearer to have the power of unrestricted motion, at the same time offering free support to the chest and dorsal muscles.

SPECIFICATIONS OF CHEMICAL PATENTS.

There has of late been somewhat of a dearth of chemical patents the specifications of which have been entitled. Some of those due, as for the manufacture of soda, &c., have "gone off," the parties declining to specify when due; and therefore losing all right and title to their respective patents.

The following are the only specifications of a chemical character due since our last notice:—

Murphree, of Staple-inn, for improvements in preserving animal and vegetable substances. Date of patent, January 30. Date of enrolment, July 30.

The first part of the patentee's process has reference to a method of preserving animal and vegetal substances by sub-

submitting them to the action of a continuous current of dry and warm air, by means of an apparatus so constructed that the requisite supply of any heated air may be kept up as will be sufficient to deprive the animal and vegetable substances operated on of all the moisture they contain, at the same time without the risk of decomposition, or injury from the temperature of the air employed, being carried to an undue excess. The second part of the patentee's improvements relates to the preparation of a saline fluid for injecting the bodies of animals in order for their preservation. This saline fluid is prepared as follows:—10½ oz. of chloride of ammonium, 10½ oz. of chloride of sodium, 3½ oz. of nitrate of potash, are dissolved in 2½ wine pints of water, the solution thus formed having a specific gravity of about 12° Beaumé. The animals to be preserved are to be injected with this saline solution, after which they may be enveloped in a coating of gelatine, or smoked in the usual manner. The patentee claims, first, the exposure of animal and vegetable substances in a close chamber to a forced current of air in order to dry such substances for the purpose of preserving the same; secondly, the injecting the carcasses of animals with the saline liquids before mentioned, such injecting being employed either alone, or in combination with the drying process before mentioned in any other.

William Onions, of Southwark, in the county of Surrey, engineer, for certain improvements in the manufacture of steel. Date of patent February 7. Date of enrolment August 7.

These improvements refer to the manufacture of cast steel, and consist of melting certain materials together and annealing the product. The patentee's process is as follows:—Two parts by weight of hematite iron ore, ground to a coarse powder, are placed in a crucible with four parts by weight of steel made in the ordinary manner, and the whole melted together. Instead of running this mixture into ingots or bars in the usual way, the articles to be formed are cast at once in sand moulds, then subjected to the process of annealing, whereby they are rendered malleable and tempered in the same manner as articles made of ordinary steel. The patentee claims the mode of manufacturing cast steel by melting matters together and annealing the products, as herein described.

In our review of patent matters we purpose to give in each number of our journal the newest intelligence of the week: if, however, a patent of adequate interest exists which may have been prepared some time back, we will offer our readers an outline of its peculiarities. Underneath is appended a sketch of the specifications of an important chemical patent.

James Augustus Elmslie and George Simpson, of Union-buildings, Leather-lane, Holborn, importers of quicksilver, and tinfoil-manufacturers, for improvements in sheathing ships; and in protecting and confining gunpowder, and certain compounds thereof, and in the materials used for such purposes. Patent dated November 30, 1850. Enrolled May 30, 1851.

These are, firstly, improvements in the mode of sheathing the bottoms of vessels, by the employment for that purpose of sheets of tin, tinfoil, or any of its alloys, as a substitute for the ordinary felt, paper, or other material usually applied beneath the copper sheathing. The patentees dispense with the use of the felt, paper, tar, pitch, and other matters, applied to the bottoms of vessels, under the ordinary metallic sheathing, and in place thereof to employ thin sheets of tin, or tinfoil. These are laid upon the vessel's bottom, after it has been duly prepared and calked; the sheets being so laid as to overlap one another, and then pressed close together, and secured to the bottom by copper or zinc tacks. The copper sheathing of the ordinary description is then laid and secured in the usual manner. By this improved mode of sheathing the bottom of the vessel will be fully protected from the water, the sheathing being of a water-tight nature.

The next part of this invention relates to the manufacture of cartridges for guns, cannon, &c., and consists in making

the cases or envelopes containing the powder of tin, tinfoil, or any of its alloys, these substances being used instead of the paper or other materials usually employed; or the cartridges usually made may be subsequently coated with the tin or tinfoil; by this means the powder is preserved from the influence of moisture, as the tinfoil forms a water-tight envelope to the cartridge.

The next improvement relates to the manufacture of wads or pellets for firearms and cannon, and consists in the peculiar materials which the patentees employ. In the use of the ordinary wads great danger exists from the inflammable nature of the materials of which they are composed; as, upon the explosion of the gun, combustion of the wads also occurs, and portions of them remaining in the gun in an ignited state often cause the explosion of the next subsequent charge. The patentees propose to obviate this by rendering the materials composing the wad unflammable. They employ as the material for making the wads certain descriptions of vegetable substances, as spent or refuse hops, and other substances of a like nature. These are rendered incombustible by steeping and treating them with a solution of alum, lime, or other substances having a like property. The material is then submitted to a drying and pressing process, by which it will be compressed, and, when sufficiently dry and hard, may be punched or stamped into the form and size required to form the wads. They are then to be enveloped in tin, tinfoil, or its alloys, to protect the material from moisture, and are then in a fit state to be used as wads, either alone or as forming parts of cartridges.

The next improvement relates to the manufacture of percussion-caps for firearms and cannon, and consists in employing tin, tinfoil, or its alloys, as the material for making the caps instead of the copper usually used. By the employment of this metal there is less danger of injury from the fractured pieces of the cap flying about when explosion takes place than when copper is used.

The next improvement relates to the manufacture of fireworks generally; this consists in making the envelopes or cases containing the combustible materials of tin or tinfoil, or covering the ordinary paper cases with tin or tinfoil, by which means the combustible materials may be preserved free from moisture, and in good condition, for any length of time, by reason of the impervious nature of the tinfoil.

The patentees claim—

The sheathing of the bottoms of ships and vessels, by the employment of tin, tinfoil, or any alloys of metals of a like nature.

The improved mode of manufacturing cartridges for firearms and cannon, by the employment of tin, tinfoil, or alloys of metal of a like nature.

The improved mode of manufacturing pellets or wads for firearms or cannon, and the employment of tin, tinfoil, or alloys of metals of a like nature, in combination with vegetable substances rendered incombustible.

The improvements in the manufacture of percussion-caps, by the employment of tin, tinfoil, or alloys of metals of a like nature, instead of copper usually employed.

The improvements in the manufacture of fireworks generally, by the employment of tin, tinfoil, or alloys of metals of a like nature, as envelopes or casings for the combustible materials of such fireworks.

PATENT MUSTARD.—1. Take 2½ oz. of cayenne pepper, 1½ lbs. of bay salt, 8 lbs. of mustard flour, 1½ lbs. of wheaten flour. Dissolve the salt in water, make the whole into a paste, and put up into pots. This is often called ready-made mustard. 2. In fifteen gallons of water, boil 10 lbs. of salt and 12 lbs. of black ginger; strain, and to each gallon add 5 lbs. of flour of mustard.

HENRY'S AROMATIC VINEGAR.—1. Put into a phial 1 oz. of the acetate of potash, with a few drops of any fragrant oil, and 20 drops of the oil of vitriol. 2. Glacial acetic acid 1 lb., oil of cloves 1 drachm, oil of rosemary 2 scruples, oil of bergamot and cinnamon each 3 a drachm, oil of pimento 24 drops, oil of lavender 1 scruple, neroli 10 drops, camphor 1 oz., alcohol ½ oz., mix them together.

PRICE CURRENT OF DRUGS, &c.

Articles having bd. or bond annexed are sold at short price exclusive of duty; when no duty is affixed the article is free. Add 6 per cent. to the duty on all articles excepting those having an asterisk prefixed. F. means foreign; B.P. British possessions.

DRUGS, &c.		Price.	
		£. s. d.	£. s. d.
ALBANY ROOT	..cwt.	1 14 6	2 10 0
ALOE, Barbadoes	..	1 10 0	6 0 0
Hepatica	..	1 10 0	5 0 0
Cape	..	1 5 0	1 13 0
ALUM, British	..ton	7 10 0	8 5 0
Boch	..cwt.	1 0 0	1 4 0
AMBERGRIS, Grey	..oz.	4 8 0	7 0 0
ANCHOVIS	..dble. brl.	17 0 0	18 0 0
ANGELICA ROOT	..cwt.	1 0 0	1 5 0
ANNATTO, Flag	..lb.	1 8 0	1 10 0
Roll	..	0 10 0	1 0 0
ANTIMONY, Crude	..cwt.	1 8 0	0 0 0
Ore	..ton.	12 0 0	0 0 0
Regulus Op.	..cwt.	2 4 0	3 0 0
ARROW ROOT	..lb.	0 3 0	1 0 0
ARSENIC, White	..cwt.	17 0 0	18 0 0
Red	..	0 0 0	0 0 0
English White	..	12 6 0	1 0 0
Yellow	..	19 0 0	1 0 0
ARZOI, Bologna	..cwt.	2 0 0	2 12 0
Florence White	..	2 0 0	2 3 0
Red	..	2 0 0	2 5 0
Naples White	..	1 18 0	2 5 0
Red	..	1 12 0	1 13 0
Sicily White	..	1 8 0	1 16 0
Red	..	1 8 0	1 10 0
French	..	1 14 0	2 7 0
Cape	..	1 15 0	2 11 0
ASPHALTUM, Egyptian	..	2 10 0	4 15 0
BORACIC ACID	..cwt.	2 12 0	2 13 0
BALSAM, Canada	..lb.	0 10 0	1 0 0
Cavi	..	1 0 0	1 2 0
Peru	..	5 6 0	6 0 0
Tolu	..	3 6 0	4 0 0
BARILLA, Spanish	..ton	0 0 0	0 0 0
Teneriffe	..	0 0 0	0 0 0
Sicily	..	0 0 0	0 0 0
East India	..	0 0 0	0 0 0
BARK, Peruvian, pale	..lb.	1 6 0	2 6 0
Good	..	0 0 0	2 0 0
Mid., do.	..	1 1 0	1 2 0
Crown	..	1 3 0	2 2 0
Yellow, Flat	..	2 0 0	4 6 0
Quill	..	2 0 0	6 5 0
Red, Flat	..	7 0 0	8 0 0
Quill	..	3 0 0	4 6 0
Cascarilla	..cwt.	1 0 0	1 15 0
Quercitron	..	8 6 0	9 6 0
Oak, English	..per load	13 0 0	14 0 0
Foreign	..per ton	3 0 0	6 5 0
New S. W.	..	5 0 0	8 0 0
BERRIES, Bay	..cwt.	19 6 0	1 6 0
Juniper, Italian	..	7 6 0	8 0 0
German	..	8 0 0	12 0 0
Turkey, Yellow	..	3 15 0	6 0 0
Persian, do.	..	8 0 0	14 0 0
BLACK LEAD, E. I.	..cwt.	10 0 0	10 0 0
Malaga	..	1 0 0	1 0 0
German	..	1 0 0	1 0 0
Dust	..	9 0 0	12 0 0
BORAX OR TINCAL	..cwt.	2 0 0	0 0 0
E. I. Refined	..	2 17 0	2 18 0
English Refined	..	3 10 0	3 12 0
BRIMSTONE, Rough	..ton	7 12 0	8 0 0
Roll	..	12 0 0	0 0 0
CAMPHOR, Unrefined	..cwt.	3 5 0	3 10 0
Dutch	..	2 12 6	9 0 0
*Refined	..lb.	1 6 0	1 1 0
CANTHARIDS, bd.	..	3 0 0	3 6 0
CAPERS, French	..cwt.	7 0 0	12 0 0
Capots	..	6 0 0	7 10 0
CARDAMOMS, Malabar	..lb.	2 6 0	2 2 0
Long Longa	..	3 0 0	3 4 0
Ceylon	..	1 2 0	1 4 0
CASTOR OIL, America	..lb.	0 0 0	0 0 0
E. I. bd.	..	0 2 0	0 4 0
CHILINA, E. I.	..cwt.	15 6 0	1 5 0
CHINA ROOT	..cwt.	10 0 0	1 0 0
COCHINEAL, Honduras Black	..lb.	2 7 0	4 10 0
Silver	..	3 4 0	3 11 0
Mexican Black	..	3 4 0	3 9 0
Silver	..	8 0 0	3 3 0
CORAL	..lb.	0 0 0	0 0 0
COCULUS INDICUS	..cwt.	1 0 0	1 7 0

DRUGS, &c., continued.		Price.	
		£. s. d.	£. s. d.
COFFEE, Jamaica, triage and ord.	..	1 12 0	1 18 0
good and fine ord.	..	2 0 0	2 6 0
low to good middling	..	2 8 0	2 10 0
fine middling & fine	..	3 12 0	4 10 0
Demerara, triage & ord.	..	0 0 0	0 0 0
good and fine ord.	..	0 0 0	0 0 0
low to good mid.	..	0 0 0	0 0 0
Berbice, triage and ord.	..	0 0 0	0 0 0
good and fine ord.	..	0 0 0	0 0 0
low to fine middling	..	0 0 0	0 0 0
Dominica and St. Lucia.	..	0 0 0	0 0 0
triage and ordinary	..	0 0 0	0 0 0
good and fine ord.	..	0 0 0	0 0 0
low to good middling	..	0 0 0	0 0 0
Ceylon, ordinary to very	..	2 0 0	2 1 0
good ord. native	..	2 4 0	2 14 0
fine ord. to mid. plu.	..	2 16 0	2 15 0
good mid. to fine do.	..	2 0 0	2 10 0
Mocha, ord. & ungarbled	..	2 18 0	2 10 0
clean garbled	..	3 16 0	4 8 0
fine	..	1 18 0	2 0 0
Sumatra, Padang, &c. ..	..	2 4 0	3 0 0
Java	..	1 19 0	2 10 0
Mysore with certificate	..	1 15 0	1 18 0
Brazil, ord. to fine ord.	..	2 0 0	2 15 0
ex. fine plant. kind	..	1 17 0	1 19 0
St. Domingo	..	1 18 0	2 0 0
Havannah, ord. to g. ord.	..	2 2 0	2 10 0
fine ordin. to mid.	..	1 18 0	2 2 0
Cuba, ord. to good ord.	..	2 4 0	2 15 0
fine ord. to middling	..	1 18 0	2 10 0
Porto Rico	..	1 18 0	2 12 0
La Guayra	..	2 0 0	2 12 0
Costa Rica	..	2 3 0	2 14 0
Cocoa, Trinidad, red	..	1 18 0	2 2 0
grey	..	1 12 0	2 2 0
Grenada	..	1 7 0	1 10 0
Para, St. Domingo, and Bahia	..	1 9 0	1 12 0
Guayaquil	..	0 11 0	1 6 0
COLOCYNTH, Turkey	..lb.	0 11 0	1 6 0
Spanish	..	2 16 0	2 19 0
COLOMBO ROOT	..	1 10 0	2 15 0
COPPERAS, Green, bd.	..ton	1 8 0	1 10 0
Blue	..	1 18 0	2 8 0
CREAM TARTAR, French	..	2 0 0	2 8 0
Venetian	..	2 0 0	2 8 0
CUSCUM	..cwt.	2 0 0	4 5 0
CUTON	..	20 0 0	22 0 0
DRAGON'S BLOOD	..hump	3 10 0	2 15 0
Reed	..	8 0 0	14 10 0
DYEWOODS:			
Brazil	..ton	45 0 0	80 0 0
Barwood, Angola	..	0 0 0	0 0 0
Camwood	..	13 15 0	28 15 0
Fustic, Brazil	..	0 0 0	0 0 0
Cuba	..	8 10 0	9 0 0
Jamaica	..	5 0 0	5 10 0
Spanish	..	4 0 0	4 10 0
Zante	..	0 0 0	0 0 0
Logwood, Campeachy	..	6 10 0	6 15 0
Honduras	..	5 0 0	5 10 0
Jamaica	..	3 10 0	4 0 0
St. Domingo	..	4 0 0	5 0 0
Nicaragua, Lima	..	14 0 0	15 0 0
solid	..	12 0 0	17 0 0
small and mid.	..	6 10 0	12 0 0
Red Sanders	..ton	4 10 0	5 15 0
* ESSENTIAL OILS			
Cloves, bd.	..lb.	2 8 0	5 4 0
Caraway	..	6 3 0	5 4 0
Lavender	..	3 6 0	7 0 0
Peppermint, bd.	..	4 0 0	11 0 0
Spike	..	4 0 0	0 0 0
Aniseed, bd.	..lb.	0 0 0	5 8 0
Cassia, bd.	..	9 0 0	9 6 0
Cayaput, bd.	..oz.	0 3 0	0 4 0
Cinnamon, bd.	..	0 10 0	3 0 0
Mace (expd.), bd.	..	0 3 0	0 6 0
Nutmegs, bd.	..	0 4 0	0 5 0
Bergamot	..lb.	9 0 0	8 2 0
Lemon	..	8 6 0	8 2 0
Orange	..	6 2 0	7 0 0
Rosemary	..	1 8 0	2 6 0
Thyme	..	2 2 0	2 0 0
Otto Roses	..oz.	13 6 0	1 0 0
Almonds	..lb.	1 5 0	0 0 0
GALANGAL ROOT, bd.	..cwt.	14 0 0	1 4 0
GALLS, sorts	..cwt.	4 0 0	4 10 0
Green or White	..	2 15 0	3 10 0
Blue	..	4 10 0	5 5 0
E. I. Blue	..bd.	2 10 0	5 0 0
GENTIAN ROOT	..cwt.	1 1 0	1 2 0
GLUE, Best Town	..cwt.	1 5 0	1 0 0
Interior	..	0 0 0	0 0 0
Foreign	..	1 10 0	2 5 0
GUINEA GRAINS, bd.	..	2 5 0	0 0 0

DRUGS, &c., continued.		Price.				DRUGS, &c. continued.		Price.			
		£.	s.	d.	¢.			£.	s.	d.	¢.
GUTTA PERCHA lb.		0	10	0		IRON, British Bars		5	2	6	0
GUMS:						Rods		6	5	0	0
Ammoniac, Lp. .. .cwt.		9	6	0	110	Hoops		7	0	0	0
Drop		1	15	0	315	Sheet		7	15	0	0
Arabic, E. I.		1	0	0	412	Cargo in Wales Bars		4	10	0	0
Cape		1	10	0	120	Pigs No. 1 Wales		3	0	0	0
Turkey, fine		8	10	0	100	No. 1 Clyde		1	19	6	0
Sods and 3rds		3	5	0	60	Russian .. C.C.N.D.		0	0	0	0
Australian		1	17	0	200	P.S.I.		0	0	0	0
Barbary, Brown		1	15	0	210	Archangel		0	0	0	0
White		3	5	0	215	Swedish		11	10	0	0
Gedda		5	0	0	60						
ANIMI, washed		3	0	0	120	LEAD, British:					
scraped		6	0	0	130	Plus ton		17	0	0	0
Copal lb.		0	6	0	28	Sheet milled		18	0	0	0
ASAFOTIDAcwt.		10	0	0	418	Shot Pat.		19	10	0	0
BENJAMIN, 3rds		4	0	0	910	Red or Minimum		18	10	0	0
1st and 2nds		1	0	0	450	White		23	0	0	0
DAMMAR		1	10	0	118	Litharge		19	0	0	0
GAMBOGE		5	0	0	100	Pig Spanish		0	0	0	0
GALBANUM		2	10	0	300	American		0	0	0	0
GUAIACUM lb.		0	6	0	10						
MYRRH, E. I. .. .cwt.		2	0	0	100	STEEL, English		0	0	0	0
MASTIC lb.		3	0	0	60	Swedish Keg		13	15	0	0
OLIBANUMcwt.		10	0	0	214	Faggot		15	15	0	0
SANDRACH		2	6	0	310	TIN, Blocks		4	4	0	0
SENEGAL, garbled		3	0	0	410	Ingots		4	10	0	0
TRAGACANTH, Picked		13	0	0	160	In Bars		4	5	0	0
Sorts		4	6	0	100	Banca .. bd. ..		4	1	0	0
LAG, Sticklac, Bengal		17	0	0	115	Straits .. bd. ..		4	1	0	0
Siam, &c.		2	10	0	380	Peruvian .. bd. ..		0	0	0	0
Shellac, Liver .. .cwt.		2	2	0	250	Plates, p. bx. of 225 Sheets:					
Ruby		2	5	0	210	No. 1 C 131 by 10 in. ..		1	5	0	0
Orange		2	5	0	218	1 X		1	13	0	0
Black		1	1	0	250	1 XX		0	0	0	0
Blood		2	0	0	280	SPELTER on the spot .. ton		14	15	0	0
Seedlaccwt.		1	0	0	200	Delivery		14	15	0	0
HELLBORN ROOT .. .cwt.		1	18	0	000	ZINC, English Sheet		21	0	0	0
HONEY, Fine		1	8	0	300	PLATINA OREoz.		0	0	0	0
ISLAND MOSS lb.		0	24	0	08	OSIDREW lb.		0	0	0	0
INDIA RUBBER, solid		0	8	0	08	QUICKSILVER		3	9	0	0
bottles		1	0	0	18	MUSK, good and fine .. oz.		10	0	0	0
small		1	9	0	26	NUX VOMICA, bd. ..cwt.		7	6	0	0
INDIGO lb.		4	2	0	47	OILS—Imperial measure:					
Bengal, fine blue		6	0	0	64	Olive, Florence, 4 chest ..		15	0	0	0
good and fine violet and purple		5	6	0	59	Luca, jars		5	0	0	0
ordinary and middling ..		4	7	0	50	Gallipoli, 266 gals. ..		38	0	0	0
good and fine copper ..		5	4	0	58	Spanish, ditto		38	0	0	0
ordinary and middling ..		3	9	0	50	Linseedcwt.		1	12	6	0
Consumers, good and fine		4	8	0	52	Rape, Pale		1	14	0	0
ordinary and middling ..		3	9	0	46	Brown		1	12	0	0
Java, good and fine ..		4	3	0	68	Cod tun		37	0	0	0
Onde, good and fine ..		3	3	0	46	Seal, Pale		35	10	0	0
ordinary and middling ..		2	2	0	32	Brown, yel., and straw		34	0	0	0
Madras, good and fine ..		3	1	0	43	Sperm		84	0	0	0
ordinary and middling ..		1	9	0	30	Head Matter		90	0	0	0
Kurpah, good and fine ..		3	6	0	56	Whale, Greenland ..		0	0	0	0
ordinary and middling ..		2	0	0	35	South Sea		32	0	0	0
Manilla good and fine ..		Withdrawn.				Cocoa Nutcwt.		1	10	0	0
ordinary and middling ..						Palmcwt.		37	10	0	0
IFECACUANHA lb.		5	0	0	66	OLIVES, French 4 bars ..2 gals		3	0	0	0
ISINGLASS LEAF, 1st sort ..		10	0	0	136	Spanish, keg 2 galls. ..		9	0	0	0
2nd sort		9	0	0	100	OPIMUM, Turkey, bd .. lb.		10	6	0	0
Simovia		2	0	0	29	Egyptian		7	6	0	0
Siberia Purse		5	0	0	60	ORONELLA, Angola .. ton		25	0	0	0
Short Staple, 1st		8	0	0	140	Cape de Verd		25	0	0	0
Long ditto		10	0	0	140	Madeira		30	0	0	0
ISINGLASS, Brazil		0	6	0	56	ORPIMENT, E. India ..		0	0	0	0
JALAP lb.		1	4	0	22	ORANGE FLOWER water .. lb.		0	8	0	0
JUICE OF LEMON .. .gal.		0	10	0	10	Peel		5	0	0	0
LAG DYE, Fine lb.		1	8	0	24	ORRIS ROOTcwt.		1	18	0	0
Good		1	2	0	15	PELLITORY ROOT lb.		0	6	0	0
Middling		1	0	0	13	PINK ROOT lb.		0	5	0	0
Ordinary		0	5	0	11	PITCH, British ..cwt.		5	6	0	0
Lake		0	3	0	08	Archangel		7	6	0	0
QUORICER Paste, Ital. ..cwt.		3	5	0	312	Stockholm		12	0	0	0
Block		4	0	0	515	Burgundycwt.		0	0	0	0
ADDEBS, Dutch Crop ..cwt.		3	6	0	210	PUMICSTONE, sorts .. ton		5	0	0	0
Ombro		3	2	0	250	QUASSIAcwt.		8	0	0	0
Gamene		1	5	0	110	QUICKSILVER lb.		3	9	0	0
Mull		8	0	0	126	RHATANIA ROOT lb.		0	5	0	0
French		0	0	0	00	RHUBARB, round		0	6	0	0
Spanish		1	10	0	200	Flat		0	8	0	0
MADDER ROOTS, Turkey ..		1	6	0	110	Dutch, trimd.		2	6	0	0
MAGNESIA, English ..		2	0	0	220	Russian		10	6	0	0
MANNA, Flakey lb.		3	0	0	26	SACCHARUM SATURNI, bd. .. lb.		0	0	0	0
Sidly		1	0	0	16	SAFFRON, Spanish lb.		1	1	0	0
MUNJRET, E. I. .. .cwt.		18	0	0	120	*SAGO commoncwt.		18	0	0	0
METALS:						Pearl		19	0	0	0
Brit. Castes ton		84	0	0	00	Sago Flour		14	0	0	0
Tile		83	0	0	00	SAL AMMONIAC, E. I. ..cwt.		1	10	0	0
Sheets lb.		0	91	0	00	English, Refined ..		1	18	0	0
Bottoms		0	10	0	00	SALTS, Glauber		6	6	0	0
Old		0	84	0	00	Epsom		6	0	0	0
A. American ton		86	0	0	00	SALF		18	15	0	0
Foreign Cake		8	0	0	00	SARSAPARILLA, Brazil .. lb.		0	10	0	0
Foreign Tile		8	0	0	00	Honduras		0	10	0	0

B.P. 5 F. 10s.

Public Sale Prices.

F 1 0 0 cwt.
BF 10 0 cwt.

per cwt. un-
wrought 4s.
B.P. 8s. 9d. F.
wrought B.P.
5s. F. 10s. old
B.P. 2s. 6d.
old F. 7s. 6d.

6 0
0 0B.

10 per cwt.

5 0 p. cwt.

2 0 2 0 gall.
0 1 0 p. lb.

DRUGS, &c., continued.		Price.			DRUGS, &c., continued.		Price.		
		£.	s.	d.			£.	s.	d.
SARSAPARILLA, Vera Cruz		0	4	0	TALLOW:				
Jamaica ..		1	6	0	Graves ..		9	0	0
SASSAPRAS ROOT ..	ton	10	0	0	Good Drugs ..		6	0	0
SAFFLOWER, E. I. ..	cwt.	5	0	0	PRICES OF CANDLES, per doz.:				
Bombay ..		1	5	0	Mould Candles ..		6	0	0
SHUMAC, Malaga ..	cwt.	12	0	0	Store ditto ..		4	6	0
Sicily ..		14	6	0	TAMARINDS, West Ind. ..	cwt.	1	10	0
Trieste ..		4	6	0	East Ind., bd. ..		13	0	0
SALTPETRE, Rough ..		1	6	0	*TAPIOCA ..	lb.	0	14	0
British, Refined ..		1	9	0	TEA: bd.				
Nitrate of Soda ..		14	3	0	Bohea, Canton, & Woping ..		0	6	0
British, Refined ..		0	0	0	Fokien ..		0	0	0
SCAMMONT, Smyrna ..	lb.	5	0	0	Coagou, ordinary and out				
Aleppo, 2nds ..		10	0	0	of condition ..		0	94	0
fine ..		1	8	0	good ordinary ..		0	10	0
SEEDS, Aniseed ..	cwt.	2	2	0	mixed blackish leaf ..		0	104	0
German ..		2	2	0	rather blackish leaf ..		0	11	0
E. I. Star ..		3	5	0	blackish leaf ..		0	113	0
Cumin ..		2	15	0	ditto rather strong to				
Caraway, Foreign ..		19	0	0	strong ..		1	04	0
SENKA ROOT ..	lb.	0	6	0	Pekoe kind and flavour ..		1	2	0
SENNA, Alexandria ..	lb.	0	2	0	Ning Yung, fair to fine ..		0	11	0
Smyrna ..		0	0	0	Pouchong ..		0	9	0
East India ..		0	1	0	Caper, chests ..		0	0	0
Tinnevely ..		0	84	0	do. in 10 lb. Catty boxes ..		0	11	0
SMALTS, Saxon, FFFE ..	lb.	1	2	0	Campol, common ..		0	0	0
FFFFE ..		1	7	0	good to fine ..		0	0	0
Danish, FFFE ..		1	3	0	Souchong, ordinary to good		0	92	0
FFFFE ..		1	8	0	fine ..		1	4	0
SNAKE ROOT ..	lb.	0	4	0	Flowery Pekoe, flat ..		1	0	0
SOAP, Naples, soft ..		1	6	0	fair to fine ..		1	6	0
Castile, hard ..	cwt.	3	0	0	very fine and flowery ..		2	4	0
British, Mottled ..		2	2	0	Black leaf Pekoe or Hong				
Yellow ..		1	18	0	Muey ..		0	10	0
White ..		2	14	0	Orange Pekoe, faint & odd		0	11	0
Scented ..		0	0	0	common to fine plain ..		1	0	0
Windsor ..		0	0	0	common to fine scented ..		1	1	0
Oil ..		0	0	0	Twankay, common ..		0	10	0
Soft B. B. ..		1	0	0	good ..		1	04	0
B. S. ..		0	0	0	fine to Hyson kind ..		1	2	0
B. ..		0	0	0	Hyson Skin, common ..		0	9	0
SODA ..	ton.	6	10	0	good to fine ..		1	0	0
ASHES, Canada ..	Pot 1st. cwt.	1	14	0	Hyson, common ..		1	1	0
Pearl 1st ..		1	12	0	fair to good ..		1	4	0
United States Pot ..		0	0	0	fine ..		2	0	0
Pearl ..		0	0	0	extra fine ..		2	10	0
SOY, bd. ..	gallon	4	0	0	Young Hyson, common ..		0	84	0
SPICES—					good to fine ..		1	2	0
Cassia Ligna, ord. to mid.		4	19	0	Imperial, common ..		1	2	0
good to fine ..		5	2	0	good to fine ..		1	5	0
Cassia Buds ..		5	10	0	Gunpowder, common ..		0	8	0
Cinnamon, Ceylon, 1st quality		2	5	0	good to fine ..		1	9	0
2d ..		1	4	0	TURNERIO, Bengal ..	cwt.	16	0	0
3d ..		0	10	0	Java ..		10	0	0
Malabar ..		0	0	0	Madras ..		12	0	0
Tellisherry ..		0	0	0	TERRA JAPONICA ..	cwt.	15	6	0
Cloves, Amboyna ..		0	8	0	Sienna ..		1	2	0
Bourbon & Zanzibar ..		0	54	0	VALONIA, Smyrna ..	ton	16	0	0
Penang ..		0	10	0	Picked Mores ..		13	0	0
Ginger, Bengal ..		15	0	0	VANILLAS, Brasil ..	lb.	10	0	0
Malabar ..		17	0	0	Vera Cruz ..		1	5	0
Jamaica ..		2	7	0	VERDIGRIS, Foreign ..		0	9	0
Barbadoes ..		0	0	0	English ..		1	3	0
Mace ..		1	10	0	VERMILION, China ..	lb.	4	0	0
Nutmegs, brown ..		2	0	0	English ..		5	0	0
lined ..		1	4	0	VITRIOL, blue ..		1	8	0
Pepper, bd. Malabar, heavy shot		0	24	0	Foreign, white ..		14	0	0
light and half heavy ..		0	24	0	English, ditto ..		1	4	0
Eastern ..		0	24	0	Oil of ..		0	1	0
white ..		0	24	0	WAX, Mogadore ..	cwt.	5	17	0
long ..		0	0	0	American ..		5	5	0
Pimento ..		0	6	0	Russian ..		7	10	0
SPONGE, fine ..	lb.	9	0	0	Hambro' ..		7	12	0
ordinary ..		1	0	0	East India ..		4	7	0
SPIRITS OF TURPENTINE ..	cwt.	1	14	0	African ..		5	0	0
SULPHATE OF QUININE ..	oz.	11	9	0	White Hambro' ..		7	0	0
SQUILLS, dry ..	lb.	0	1	0	English ..	cwt.	2	0	0
undried ..		0	0	0	Cape ..		5	15	0
SPERMACEUT, English ..	lb.	1	4	0	West India ..		0	0	0
American ..		0	0	0	WELD ..	load	0	0	0
STARCH, English ..		2	6	0	WOOD ..	ton	0	0	0
Irish ..		0	0	0	WOOD, Sapan Bimas ..		1	0	0
POTATO FARINA ..		14	6	0	Siam ..		8	0	0
TALLOW:									
Petersburg, new ..	cwt.	1	18	3	ORANGE LAKE.—Best Spanish annatto 4 oz., pearl-ashes				
old ..		1	17	9	1 lb. Boil in 1 gallon of water for half an hour, then strain.				
Delivery last three months		1	19	0	Dissolve 1½ lb. of alum in 1½ gallon of water; strain and add				
South American ..		1	17	0	the coloured liquid. As long as any sediment falls, strain				
Odessa Sheep ..		0	0	0	and dry the sediment.				
North American ..		0	0	0	ARTIFICIAL MUSK.—Rectified oil of amber 1 lb., nitric acid				
Australian ..		1	15	0	4 parts; after some time a black matter is deposited; this,				
Town Tallow ..	cwt.	1	19	6	after having been well washed with water, has very much				
Fat by ditto ..		2	1	0	the smell of musk. True musk is adulterated with this, but				
Russian Candle ..		1	19	6	still oftener with dried bullock's blood.				
Melted Stuff ..		1	8	0					
Rough ditto ..		18	0	0					

DRUGS, &c., IMPORTED INTO LONDON IN THE WEEK ENDING WEDNESDAY, AUGUST 13.

THURSDAY, Aug. 7.—In the Baron Osy, from Antwerp. 80 cks. 29 cs. 61 ingots zinc, 12 cks. oil.

—In the Ocean, from Rotterdam.

4 bds. lignum quassia, 7 bds. Venice turpentine.

—In the Magnet, from Amsterdam.

11 cks. 1 bale beeswax, 59 bags carraway seed, 6 cks. nutmegs.

FRIDAY, August 8.—In the Toms, from Cronstadt. 400 cks. tallow.

—In the Honor, from Stettin.

8837 pcs. zinc.

SATURDAY, Aug. 9.—In the Andreas, from Gottenburg. 1372 bars iron.

—In the Blenheim, from Gottenburg.

500 kgs. 400 bds. steel, 1081 bars iron.

—In the Princess Royal, from Smyrna.

120 tons valonia.

MONDAY, Aug. 11.—In the Sir Edw. Banks, from Havre. 193 pcs. gutta percha.

—In the Soho, from Antwerp.

15 bds. almonds, 2 cks. oil, 46 alabs 31 cks. spelter.

—In the Fyncoord, from Rotterdam.

77 cks. lead ore.

—In the Lavinia, from St. Lucia.

10 tons logwood, 7 bds. old copper.

—In the Perseus, from Moulmein.

400 bags 473 bds. cutch.

TUESDAY, Aug. 12.—In the Independence, from New York.

164 arns. bark, 160 bxs. sarsaparilla syrup.

WEDNESDAY, Aug. 13.—In the Partenotes, from Naples.

246 cks. tartar, 8 cs. gum.

TO THE EDITOR OF THE CHEMICAL RECORD.

Sir,—Many thanks for the comments of your last number's leader on the position, prospects, and functions of the Pharmaceutical Society. They are calculated to do a vast deal of good.

If other journals had taken up the investigation in a similar strain, the Pharmaceutical Society would have vindicated its position amongst the ameliorative constitutions of modern years, instead of being a mere clique for the self-advancement of a favoured few. What value, sir, may I ask, does membership of the Pharmaceutical Society confer upon the country assistant, who cannot leave his business to attend their lectures, and be present at their convivial tea and toast parties? All that the country assistant has as a *quid pro quo* for his annual subscription is the Pharmaceutical Society's journal, a work which some will think, and your correspondent amongst the number, to be dear at any price. Whatever may be the ambition of Mr. Bell, the editor, that of literary celebrity is surely not one, or he would fill his journal with other matter than antiquated articles from other journals, cut bodily out and transferred as a part of the chapter-headed articles "Original and Selected."

Trusting, sir, that you will return to the subject of the Pharmaceutical Society again, may I be permitted to express a hope that you will lend your powerful aid to advocate the rights of the assistant, which are ruthlessly trampled upon by the magnates of Bloomsbury-square?

I am, sir, yours obediently,

A COUNTRY ASSISTANT.

OUR GLEANINGS.

A writer in the *Presse* gives us a curious account of his mystification by a so-called telegraph of snails. The translation of his paragraph we present our readers; and beg leave at the same time to assure them that the snails were merely associated with the telegraph for the purpose of confounding new scientific observers. The telegraph is evidently actuated by electricity or voltaism, developed in the ordinary manner, and so distributed that it interposes an effectual barrier

to the escape of the snails. "Before commencing the account of this strange experiment," says the *Presse*, "let us declare distinctly that we do not accept in any way the responsibility of the assertions of its inventors. Curious facts were produced in our presence by means of an apparatus in which there were snails, many snails, and some of the largest size; but we do not know to what extent it is possible to correspond from one hemisphere to the other by means of a universal language, and with the celerity and certainty which the inventors flatter themselves to have obtained. But be this as it may, and spite of our personal doubts and the silence of the demonstrator, we fancied we saw something which was neither a mystification nor an hallucination. On Sunday, the 3rd of August, we went to 86, Route d'Asnières, at the Batignolles, to the house of M. Droux, ex-mayor of the commune, where it was announced an experiment was to be made. A small number of persons were invited, and among them were M. Victor Hugo and M. Emile de Girardin. The master of the house led us to a sort of barn, where we found at each end two structures in wood placed on open stands. In the front of each was a large wooden wheel moving on its centre. This wheel, about two yards in diameter, presented the most singular appearance: 300 or 400 snails were kept immovable by means of a sort of paste in a reservoir in zinc; the open part of the shells was towards the spectator, and some of them protruded their heads. On the wheels were lines of metal, on one of which were the snails, and on the other letters of the alphabet. The reservoirs in zinc in which the snails were placed were lined with cloth and copper, like the voltaic pile, and all the reservoirs were connected by conducting wires which were collected on the axis of the wheel. One apparatus was to serve to send a despatch, the other to receive it; we will, to make the demonstrations clearer, call one 'Paris' and the other 'London.' In turning the wheel the letter required was brought to an opening, and designated by a needle. Each time that Paris sent up a letter to the opening, and designated it by the needle, M. Benoist, in the structure called London, wrote it with a pencil on paper, after having discovered it on his own wheel, by, as he said, moving a snail in its reservoir on the letters, which snail made a movement on passing by the letter indicated. This is the mystery, and we know no more of it than you do. We wrote in the box representing Paris the word *enfer*, and it was perfectly reproduced at London. Another person wished to send the word *tellus*, but, either from want of practice, or irregularity of the machine, M. Benoist received the letters C T Z Z L J. We ourselves recommenced, with M. Victor Hugo by the side of us, in the enclosure Paris, and we sent B E N O I S T, which was perfectly reproduced in London. Then we sent the word *Deus*, with a mark ρ between the U and S, and it was perfectly received and reproduced. Such is what we saw; an apparatus, of wood, copper, zinc, and snails, sent to a similar apparatus, at a distance of fifteen yards, three words. But was it really the snails which acted? Was it simply the pile formed by the juxtaposition of copper and zinc? Could the same effect be produced in the same manner, at long distances? These and other questions can only be solved by experience."

The Metropolitan Water Bill, although abandoned for this session, as our readers have been made aware, was still permitted to be discussed in committee for the sake of assisting the efforts of future legislators. The result of this discussion is, that the committee cannot agree on the preamble,—hence the necessity for consolidating the various water companies into one is abandoned. Another proposal for the supply of the metropolis with water has been mooted by Mr. Lee in a communication to the *Times*. This gentleman proposes to avail himself of the water supply of the Colne at Uxbridge. "There is no other stream," he remarks, "within any reasonable distance of London (putting the River Lee out of consideration) which yields any thing like a sufficient quantity for the supply of the metropolis, except the River Colne; that is, the Colne as it exists in the neighbourhood of Uxbridge; and, as well as the second, it fulfils also the third requirement, as to quality, being, in fact, made up almost exclusively of chalk springs, similar to those at Wat-

ford, in favour of which the commissioners have reported; and, as appears from the analysis of these waters, as made by Professor Brande and the late Richard Phillips, the quantity of solid matter and the nature of the saline ingredients contained in the waters of the Colne at Uxbridge, and as taken from the Bushey Meadows well, are nearly identical. It was no doubt the abundant supply which this stream affords, added to the fine quality of the water, which induced the late eminent engineer, Mr. Telford, to fix on one portion of it for the supply of the northern part of the metropolis. The Colne, as it exists at Uxbridge, is made up of no less than five different streams, which are the natural drains or outlets of a large portion of the chalk formation in the counties of Buckingham and Hertford. These streams are:—1. The Colne Proper. 2. The Ver. 3. The Bulbourne. 4. The Gade. 5. The Misbourn. And at Uxbridge, where all the waters of these five streams are concentrated (with a large quantity of chalk water brought down by the Grand Junction Canal), the minimum daily supply, as ascertained from gaugings which I have had made, and which extend over a considerable period, exceeds 50,000,000 gallons, or more than sufficient for the supply of the whole of London. In fact, this was the minimum quantity yielded during the autumn of 1850, one of the driest seasons ever known, and for at least six months in the year the quantity which could be collected here exceeds 100,000,000 gallons per diem, and after heavy rains often exceeds double this latter quantity. The Grand Junction Canal, the two southern forks of which terminate at Brentford and Paddington, intersects and runs together with these streams for considerable distances in various parts of its course, between Great Berkhamstead, in the county of Hertford, and the town of Uxbridge, in Middlesex. At the latter place a separation takes place, the waters of the Colne being diverted, and running on to Staines, where this river joins the Thames, whilst the canal pursues its southward course to Brentford and Paddington. "Whatever value," remarks Mr. Lee, "the Watford well scheme, and other projects of this nature, may possess, the idea of obtaining a supply sufficient for the whole requirements of the metropolis in this manner is one which no disinterested and practical engineer, with our present knowledge as to the quantity of water which wells in the chalk will yield, could for one moment entertain, and I much doubt whether even the works as proposed at Watford will afford the proposed 'permanent' supply of 8,000,000 gallons, unless a line of wells be sunk, extending a considerable distance up the valley. But, be this as it may, no Government could safely trust the supply of the metropolis to any untried scheme, whether at Watford or in the neighbourhood of the Bagshot sands, the waters of which are still *in subdubio*, and their permanent realization so highly problematical."

A great deal has been said about the revolving or repeating pistol of Mr. Samuel Colt, and, judging from evidence which has come before us, the power of the weapon can scarcely be overrated. "Detaching a company of Rangers to engage and destroy this outpost," a correspondent of the *Huntsville Democrat* says, "the general passed on, side by side with the daring Hays, into the heart of the town. From the house-tops, from the doors and windows on each side of the street, a storm of bullets was poured upon them. Returning the fire of the Mexicans only by an occasional shot, as some eager assailant incautiously exposed his person, the Americans pushed forward with unabated rapidity for the main Plaza. Here they were encountered by a body of lancers, under Jarauta in person; but as well might a feeble barrier of sand be expected to stay the current of the mighty Mississippi. On went the Rangers, neither sword or lance in the right hand, but in lieu thereof the terrible 'revolver,' ready poised for its bloody work. A little nearer, and without a word of command, without a signal, save the example of their leader, they poured in their deadly fire, and with a wild shout burst with irresistible fury upon the Mexican ranks. Down went horse and rider—down went lance and guidon. Like a tempest, the men of the States swept over them, and the gay uniforms of the lancers, their red bonnets, and gaudy plumes carpeted the stone pavements of the Plaza. For the success of this charge Colonel Hays had

relied on the bone and muscle of his horses, even more than the intrepidity of his men. The enemy once broken and scattered, the battle became a succession of single combats, in which man after man went down before the fire of the 'revolvers,' with apparent rapidity. Not a single lancer was unharmed—Jarauta himself was twice wounded; and finally, after doing all that courage and conduct could effect, made his escape almost by a miracle." A great number of these pistols and carbines, made on the same construction, are in the Great Exhibition. Our American brethren seem very fertile in their improvements on firearms. Mr. Maynard, of Washington, has devised a new means of priming firearms which presents great advantages over the ordinary method of caps.

The following very curious discovery has just been made in the province of Bulgaria. Some Greek workmen, in digging near the village of Rahmanhileah and the town of Hadzah, found a large table of grey-coloured marble; they removed it, and found one beneath exactly similar; having removed that also, they saw a great number of objects shining like gold and silver. They hastened to the captain of the district, and that functionary, assisted by two ecclesiastics, proceeded to make an examination. They found a skeleton of large stature, with a copper helmet on his head, surrounded by a thin crown of gold: the hands and arms up to the elbows were stained with something of a bronze colour; in the right hand was a copper chain, with an incense-box of the same metal, covered with verdigris; on the third finger of the left hand was a gold ring, with the figures in Roman characters, 966. By the side of the skeleton were three cups in silver, very brilliant, and twenty-six cups in iron, very rusty, but bearing traces of having been gilded; there were also an immense number of nails, and about 500 arrows, of which the wood was rotten, and the points rusty. The skeleton and the different articles were carefully packed up, and sent to Adrianople for examination.—*Sci. Amer.*

Everybody knows how assiduously Mr. Goldsworthy Gurney laboured to develop the use of steam-carriages on common roads; and of the success he met with. The project, however, has been lately revived. A numerous meeting has been held at the Guildhall, Bath, for the purpose of hearing Messrs. Motley and Clarke give explanations of the details and presumed improvements and advantages of their patent steam-carriage for common roads. Mr. E. Saunders took the chair, and, after a short introduction by Mr. Motley, Mr. Clarke described the machinery by the aid of models and diagrams. They propose to place the machinery in one carriage, called a steam-dray, and the passengers in another attached. The boiler weighs only 1 cwt. per horse power, will stand a pressure of 300 lb. to the inch; and one of 15 horse power occupies a space of only $2\frac{1}{2} \times 4 \times 6$ feet. The maximum speed they state at 15 miles an hour, average 10 miles, and ascending an incline of 1 in 10 of 4 miles per hour. The steering apparatus moves the wheels, while the axle remains fixed, and they state they can stop instantly. The following letter, highly complimentary to Mr. Clarke, from Mr. Simms, the engineer of Redruth, dated June 12, was read to the meeting:—"You have got with you a partner in the patent who is endowed with a highly inventive mind, and, having myself noticed the various plans hitherto brought before the public, I have no hesitation in saying that the plans suggested to me by Mr. Clarke are very far superior to any others that have come under my notice. I have no doubt whatever that the steam-carriage for common roads will soon get extensively into use, and will be the most magnificent improvement with which the inventive genius of this great scientific country will astonish the world." The chairman, at the close of the explanations, expressed his willingness to assist in furnishing means for erecting an engine, and giving the patent a fair trial; and, we understand, it is proposed to raise the sum of \$500 in sums of £5 and upwards, and to give the benefit of the success to the first subscribers, in proportion to the sums subscribed; and the patentees are in sanguine expectation that the required amount will be obtained in Bath and Bristol in a few days.—*Mining Journal.*

Galignani's Messenger informs us that patents have lately been taken out in nearly all the large states of Europe for a

discovery which, if it realizes only one-fourth of what the inventor promises, will cause a total revolution in the application of steam. The patentee, who is an American engineer of great celebrity, professes to have perfected an engine by which the steam, instead of passing off in a half-consumed state, deposits its caloric and recovers new power, thus effecting an economy of 90 per cent. The idea on which the invention is founded appears to have been borrowed from the respirator worn over the mouth, and in which the caloric of the breath is arrested by metallic meshes, and warms the cold air taken into the lungs.—[Very pretty, if true.]

TO MAKE SULPHUR COINS.—Prepare first the requisite moulds of both sides of the coin, by pouring plaster of Paris on each side alternately. Make a line, or other mark, on each mould, to show the position that they are afterwards to be placed in, that the heads and devices may be in such a position relative to each other as they are in the original coin. Then melt some sulphur (that is best which has been melted two or three times before, so that it has acquired a light brown colour). When ready to pour, hold the two moulds at the proper distance from each other, according to the thickness of the coin, and with the marks of both in a line with each other, and wind round the edge of the moulds a strip of card, in such a manner that the card shall go very nearly round them; a small vacuity only being left at the top. This being prepared, hold the card between the fingers and thumb, then pour in the sulphur, and as it shrinks pour in more, until the space between the moulds is full. It will immediately congeal, and, when removed, it will be found to have taken a fine impression from the moulds, and to have all the sharpness of the original coin. When taken out, it may be trimmed with a knife around the edges, for sulphur has the property of remaining soft for some considerable time after melting. To give the artificial coins clearness and an appearance of antiquity they must be rubbed all over with blacklead, and then the blacklead removed from the more prominent parts with a soft damp rag. A fine metallic appearance is given to medals by varnishing over the blacklead surface with a weak solution of dragon's blood in spirits of wine, instead of partially rubbing the blacklead off. The moulds must of course be damped previously to using.

SUBSTITUTES FOR YEAST.—1. Mix with 12 lb. of flour 1 oz. of carbonate of soda, along with the usual quantity of salt. Knead the whole up with sour buttermilk; if very sour, half water and half buttermilk will do; but all buttermilk is preferable, which will be no worse if kept one, two, or three weeks before it is used; the more acid the better. The dough will be ready for baking in a quarter of an hour, as the fermentation goes on while kneading; but it will take no harm by standing one, two, or three hours. The buttermilk must be acid, the soda pounded small, and well mixed with the flour, and the oven brisk, or the bread will probably be heavy, and taste of the soda.—2. Put 1 oz. of hops into a coarse bag, and boil them in 2 quarts of water; pare, boil, and mash 1 lb. of potatoes very well, and press them through a colander into the hop water. Place the mixture on the fire until it begins to boil, then empty it into an earthen vessel with a narrow bottom, in which there has been previously mixed $\frac{3}{4}$ lb. of flour, with a gill of cold water, in the form of a paste; stir it well while pouring in, and when it is about the warmth of new milk put in 4 oz. of dry flour, and 1 lb. of common yeast; let it stand in the vessel, covered up, in a situation where it will keep its temperature. It takes from four to twenty-four hours to ferment, according to the state of the weather. When it begins to lower in the vessel it is fit for immediate use; or may be preserved, when put in a bottle and corked up, for several weeks. Should it be frozen, it will be no worse after being thawed.—3. Make about a pint or a quart in the manner above directed, except in one particular; instead of putting any barm with the dry flour into the mixture, put two or three spoonfuls of sugar with the flour; bottle it immediately, and having tied down the cork, set it where it will keep warm, and in twenty-four or thirty hours this will answer to ferment with, instead of the common barm. But it is always better to preserve some of the old for this purpose.—4. Boil 1 lb. of good flour, $\frac{1}{4}$ lb. of brown sugar, and a little salt, in 2 gallons of water for one

hour; when milk-warm, bottle it and cork it close; it will be fit for use in twenty-four hours. One pint of this will make 18 lb. of bread.—5. To 1 lb. of mashed potatoes (mealy ones are best) add 2 oz. of brown sugar, and 2 spoonfuls of common yeast; the potatoes first to be pulped through a colander, and mixed with warm water to a proper consistence. Thus a pound of potatoes will make a quart of good yeast. Keep it moderately warm while fermenting.

TO REMOVE SUPERFLUOUS HAIR.—Take 1 oz. of fresh stone lime, pure potash 1 drachm, sulphuret of potassium 1 drachm. Reduce them to an impalpable powder in a Wedgwood mortar. Let the hair be first washed with hot water, by holding a wet cloth as hot as possible to it for ten minutes. The application, formed into a thin paste with hot water, and applied directly, effectually removes the hair in five or six minutes; it must then be immediately removed with hot water. It is a very powerful caustic, and if suffered to remain long corrodes the skin; to remedy which, the place should be washed with warm vinegar and water, in preference to water alone.

TO PREVENT HAY STACKS TAKING FIRE.—Where there is any reason to fear that the hay which is intended to be housed or stacked is not sufficiently dry, let a few handfuls of common salt be scattered between each layer. This, by absorbing the humidity of the hay, not only prevents the fermentation, and consequent inflammation of it, but adds a taste to it, which stimulates the appetites of cattle, and preserves them from many diseases.

PHOTOGRAPHIC PAPER.—I. *Talbot's first method.*—Take superfine writing paper, and dip it into a weak solution of common salt, and wipe it dry, by which the salt is uniformly dispensed throughout its surface. Then spread a solution of nitrate of silver on one surface only, and dry it at the fire. The solution should not be saturated, but 6 or 8 times diluted with water; when dry, the paper is fit for use. II. To render this paper more sensitive, it must be again washed with salt and water, and afterwards with the same solution of nitrate of silver, drying it between times. III. *Cooper's receipt.*—Soak the paper in a boiling hot solution of chlorate of potash for a few minutes; the strength of the solution is of little consequence. Then take it out, dry it, and wet it with a brush on one side with nitrate of silver, 60 grains to 1 oz. of water, or if not required to be very sensitive, 36 grains to the oz. will do.

TO REMOVE STAINS OF LUNAR CAUSTIC.—1. Take of chloride of mercury 2 drachms, hydrochloric acid 2 drachms; dissolve. This must be applied to the stain with a camel's-hair pencil, and the linen, paper, &c., immediately plunged into water, when the stain will be removed. Let it be afterwards dried in the sun.—2. If a small piece of the iodide of potassium is rubbed on the part (which must be previously wet), it will immediately decompose the blackened oxide, and convert it into the iodide of silver, which is soluble in water, and consequently may be discharged by washing. The above process will answer equally as well for linen, muslin, &c. Hot water dissolves the iodide much quicker than cold.

LUTING FOR BOTTLES.—Common resin, red ochres reduced to fine powder, yellow wax, and oil of turpentine. These must be melted over a fire in the following manner; and the vessel in which it is made should be capable of holding three times the quantity required, to allow ample room for boiling up. An earthenware pipkin with a handle is the best thing for the purpose, and a lid must be made of tin to fit it. The luting will be rendered more or less brittle, or elastic, as the red ochre prevails. The wax is first melted, and then the resin; the ochre is then added in small quantities, and stirred quickly with a spatula each time. When all the ochre has been added, it must be allowed to boil six or eight minutes; the turpentine is then added, and briskly stirred with the spatula, and continued boiling. There is considerable risk of the mixture taking fire; should it do so, the lid must immediately be put on the vessel to extinguish it.

MILK OF ROSES.—*English Method.* Take 2 oz. of Jordan almonds, 10 oz. of rose water, 1 oz. of rectified spirits of wine, 15 drops of English oil of lavender, 1 drachm of

Castile soap, and 1 drachm of oil of sweet almonds. Blanch the almonds in boiling water, dry them well in a cloth, and then pound them in a mortar till they become a complete paste. Pound the soap in the same mortar, and let it be well mixed with the almond paste. When this is done add the oil of almonds, mix again, and then with a spatula stir in the rose water and spirits, having previously mixed them together. Strain the whole through a clean white cloth, and add the oil of lavender to the expressed liquid, drop by drop, stirring it the whole time. When the mixture has stood a day, covered with a cloth to keep it from dust, it must be bottled.—2. Liquor of potass, oil of almonds, and hot water, of each 1 oz.; agitate till perfectly mixed, then add 3 or 4 oz. of rose water, and again shake it up well.—3. Add to the last receipt either $\frac{1}{2}$ oz. of orange flower water, or a drachm of essence of bergamot.—4. *French Method.* Mix together tincture of benzoin and tincture of storax, of each 3 drachms, spirit of roses 40 drops. Drop this mixture gradually into $\frac{1}{2}$ pint of rose water, stirring them well all the time.—5. *German Method.*—Take of extract of lead 2 drachms, spirits of lavender 3 drachms, rose water 2 oz., spring water 6 oz., ceruse 4 scruples. Rub the ceruse and extract of lead together in a mortar, and, when well mixed, add the waters, and lastly the spirits.

SEPIA is the produce of the cuttle fish, and is that brown liquid which the animal ejects to darken the water when pursued by enemies. One part of it is capable of making 1000 parts of water nearly opaque. The *sepia officinalis* is sought for in the Mediterranean, where it is abundant. Its bag of liquid is extracted, the liquid poured out, and dried as quickly as possible. The dried native sepia is prepared for the painter by first triturating it with a little caustic lye; then adding more lye, boiling the liquid for half an hour, filtering, next saturating the alkali with an acid, separating the precipitate, washing it with water, and finally drying it by a gentle heat.

TO BRONZE PLASTER CASTS.—When water colour is used the work must be sized over until it will bear out, that is, until the moisture will stand upon the surface, and not sink immediately in. After the cast or sculpture has been properly sized it is ready to receive the colour; this is prepared by grinding prussian blue, yellow ochre, and lampblack, in some weak size. The colours ought to be ground separately, and afterwards mixed together, as the Prussian blue requires more grinding than either of the others; and because they may afterwards be so mixed as to produce any tint required. The colour must be spread evenly over the article to be bronzed, and allowed to dry. When it is dry dip a brush into some thin oil gold size, scrape the brush so that but little of the size may remain in it, and pass it over the figure so as just to moisten every part; it is then to be put by until it becomes tacky, that is, until the finger will adhere to, but not to be moistened by, the size; it is then ready to receive the bronze powder. When gold size is not at hand, a little japanned varnish, or even fat oil, diluted with spirits of turpentine, will answer the purpose. Sometimes the bronze powder is applied without the intervention of any adhesive matter, excepting the size contained in the water colour. It must then be rubbed on before the colour is perfectly dry.

WATCHMAKERS' OIL.—Place a clean slip of lead in a white glass phial of olive oil; let the phial be now exposed to the direct rays of the sun for some days till there is a settled deposit at the bottom of the phial, and the oil has become clear and colourless. The oil thus purified is very limpid, and does not get thick by age.

METALLIC PAPER FOR MEMORANDUM BOOKS.—1. Apply to the surface of good paper a solution of isinglass, with a small quantity of whitelead powder mixed in it.—2. Rub the paper slightly over with phosphate of lime, i.e., bones burnt to whiteness, and mix it, after being well pounded, with size. Prepared hartshorn will answer the same purpose as the prepared bones.

SODA CAKES.—Flour 1 lb., bicarbonate of soda $\frac{1}{2}$ oz., sugar and butter, of each $\frac{1}{2}$ lb., currants $\frac{1}{2}$ lb.; make a paste with milk, and add candied orange or citron peel, or the fresh peels grated.

* Gentlemen who send manuscript to the **CHEMICAL RECORD** under arrangement for payment are informed that original matter alone will be allowed to count; no abstracts, translations, or adaptations being receivable under the terms proposed. The propriety of this will be obvious.

"Mr. H. Harris" sends us the following letter:—"August 11.—Sir,—Would you be so kind as to inform me, through the medium of your journal, whether you think there will be published a fresh edition of Boyle's 'Materia Medica,' in consequence of the new 'Pharmacopoeia'? And also if you would recommend an apprentice, when out of his time, to be for a term in the laboratory of the Pharmaceutical Society, in preference to the College of Chemistry? If you have space to answer these questions I shall feel very much obliged.—A new edition of the book in question does not necessarily depend on a new edition of the 'Pharmacopoeia.' The writer should address a note to the publishers for more certain information. A person disposed to learn chemistry will study equally well in any laboratory, where there are competent instruments and average instruction. We know of no specific advantage to be gained by study in the laboratory of the Pharmaceutical Society.

"Mr. P. Burfield."—The first mulberry-trees planted in England are now standing in the gardens attached to Slon-house. Shakspeare planted a mulberry-tree with his own hands on his ground at Stratford-upon-Avon; and Garrick, Macklin, and others were entertained under this mulberry-tree in 1743. Shakspeare's house was afterwards sold to a clergyman of the name of Gastral, who cut down the mulberry-trees for fuel; but a silversmith purchased them, and manufactured them into ornaments.

"Mr. J. Norton."—Prussic or hydrocyanic acid was first discovered by Diebach in 1709. Scheele first obtained it in a separate state about 1782.

"Mr. N. Gower."—Boiling to death was made a capital punishment of England by statute 23rd of Henry VIII. This act was occasioned by seventeen persons having been poisoned by Rouse, the Bishop of Rochester's cook, when the offence of poisoning was made treason, and it was enacted to be punished by boiling the criminal to death. In this way Margaret Davis was executed for poisoning in 1541.

"Mr. Henry Stanning."—The compound termed *Marselles vinegar* derives its name on account of its having been employed at Marselles for the purpose of disinfection when plague was rife. Its composition is as follows:—Tops of rosemary and flowers of sage each 4 oz., dried lavender flowers 3 oz., cloves 1 drachm, distilled vinegar 1 gallon. Digest for seven days, press, and filter. This compound is an agreeable aromatic vinegar, but the vegetable incorporations have not the least effect in preventing contagion.

"Navigator."—Marine soap is so called on account of its property of lathering with sea water. It is made by boiling together soda lye with cocoa-nut oil.

"Pintor."—Vandyke-brown is a bituminous vegetable mass extracted from the lower stratum of peat-bogs.

"Mr. C. Johnson."—Bats seek with avidity bodies scented with many of the strong-smelling volatile oils, amongst which oil of rhodium enjoys great celebrity. It is extracted from the wood of *convolvulus scoparius*. It has a yellowish-red colour, and a smell something like otto of roses, which it is frequently employed to adulterate.

"Mr. O. Jerningham" should apply to the secretary, who will give him the information he seeks. There is nothing to be paid.

"Mr. N. Kershaw" would most probably obtain the situation he desires through an advertisement in our columns.

"Mr. James Burton, Manchester," shall receive from our office a private communication.

"Adolescence."—The premium varies from £50 to £500. We should consider £350 a fair price.

"Mr. John Dickson" writes us the following letter:—"Sir,—In the list of persons who went down to Birmingham, by invitation from the mayor, I observe the name of Dr. Jacob Bell, pharmacist. Is this Jacob Bell of Oxford-street? And, if so, where did he get his doctorate? I am inclined, sir, to think that Bell-metal—if gold, as some people say contains a notable alloy of brass.—I am, your obedient servant.—[We imagine the "Dr." to be a printer's mistake.—Ed.]

"Semolina" is a preparation of flour, made by moistening it and forming it into little balls, or granules, which are then dried. It is insoluble in hot water.

"Mr. O. Burden."—East Indian or Chinese rhubarb is not in round but in longish flat pieces, without perforation; and externally it is of a brownish-yellow, not reddish-yellow like the Russian. The texture is more compact and heavy, and it is less easily powdered. When broken it is more compact and smooth, and has a dull colour, mottled with yellow, pink, and grey. The smell is stronger, and the taste more nauseous. The powder is also reddish, and not so bright yellow. Chemically, it contains less tannin and resin, but more gallic acid and extractive matter. English rhubarb is sometimes cultivated, but has seldom answered the views of the speculators. It is not, indeed, well ascertained what species of rheum produces the foreign rhubarb.

The **CHEMICAL RECORD** AND **DRUG PRICE CURRENT**, conjointly managed by a **CHEMIST**, a **PATENT SOLICITOR**, and a **LONDON BROKER**, is published weekly, at its office, 17, Upper Wellington-street, Strand. It may be had through any bookseller or newsmen, and will be regularly furnished from the office to quarterly, half-yearly, and yearly subscribers. Price 5d., stamped 6d.; quarterly, 6s. 6d.; half-yearly, 12s.; yearly, 22s. Payment in advance.

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(Signed)

JOSEPH HENRY GREEN.

Lincoln's-inn-fields, 15th April, 1835.

From BRANSBY COOPER, Esq., F.R.S., one of the Council of the Royal College of Surgeons, London; Surgeon to Guy's Hospital, and Lecturer on Anatomy, &c.

Mr. Bransby Cooper presents his compliments to Mr. George Franks, and has great pleasure in bearing testimony to the efficacy of his Solution of Copaiba in Gonorrhoea, for which disease Mr. Cooper has prescribed the solution in ten or twelve cases with perfect success.

New-street, April 13th, 1835.

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I have frequently prescribed Franks's Specific Solution, and deem it a valuable remedy in cases where Balsam of Copaiba may be prescribed with propriety, and have no hesitation in stating it is superior to any other preparation of the Balsam. (Signed) H. A. CÆSAR, M.D.

South Mall, Cork, Nov. 9th, 1841.

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The National Provincial Life Assurance Society has been established with the view of promoting a greater extension of the principles of Life Assurance generally, and, by applying the principles of Mutual Aid and Co-operation to individuals in every class and condition of life, to secure a system of Education to the Children and Relatives of its Share and Policy Holders.

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This Society is established upon the principle of Mutual Assurance, according to the Assured all the advantages of the Mutual principle, without the personal liability of its Members, and with the security of a Guarantee Fund of £50,000 divided into 10,000 Shares of £5 each. No liability is incurred beyond the amount of the shares actually subscribed for.

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 - Thirdly.—To a Fund for the purpose of redeeming the paid-up capital of the Society, together with a bonus of £100 per Cent.; thereforward the whole of the profits (with the exception of 10 per Cent., which will be applied to the "Educational Fund" until such Fund shall have amounted to £500,000) will be divided amongst the assured 5 per Cent.
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CHEMICAL RECORD

AND

Drug Price Current.

No. 6.]

SATURDAY, AUGUST 23, 1851.

[PRICE 5D.
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(Copy.)

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VOL. I.

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ON AGRICULTURAL CHEMISTRY.*

By M. P. JOIGNEAUX.

(Continued from page 24.)

Lime.—This substance is nothing more than limestone deprived of its carbonic acid, by exposure to fire in a kiln; and hence, if lime be abandoned to the atmosphere, it gradually absorbs fresh carbonic acid and fresh water, thus becoming what is termed *air-slaked*. It assumes, in point of fact, its original composition, *carbonate of lime*; but in physical condition it remains a powder, never again returning to the character of limestone.

The affinity which quicklime manifests for carbonic acid, is so extreme that if it be placed in contact with animal or vegetable substances capable of furnishing this gas it rapidly decomposes them, and it is on account of this property that lime in agriculture exercises so powerfully-decomposing an effect.

Thus, in poor siliceous soils, which are greatly in want of humus, lime, by being mixed up in them along with vegetable matters, rapidly exercises its decomposing agency on the latter, and develops humus, which the soil so greatly requires. In virtue of the same peculiarity, lime is very useful as an addition to lands newly broken up, and which contain abundance of leaves, and roots, and grass, all of which it is important to be decomposed. When employed in light sandy soils, the agriculturist will act wisely in mixing it with argillaceous marl, for lime unmixed is very apt to be washed by percolating water, so deep into the subsoil that it becomes useless as a manure.

When the agriculturist is desirous to take advantage of the caustic property of lime for the purpose of destroying noxious plants, he should apply it at the period when the latter are in seed, by which precaution their reproduction will be totally prevented. As for the time that should be allowed to the lime for developing its agency, two or three months in a general way may be specified, at the end of which period not only will it have destroyed the vegetable tissues, but will have absorbed any injurious acids which may have been present in the soil.

The employment of lime does not enable the cultivator to dispense with manures; on the contrary, when operating upon poor soils, lime should be ploughed down with some green crop. As for ordinary farmyard manure, it may be added to the land, after the operation of liming, and after the lime has ceased to be caustic, but should never be used simultaneously with that agent, on the vegetable matter of which it would exercise its disorganizing effect, instead of upon the undecomposing vegetable matters which especially require the aid of its disintegrating power.

From forty to sixty hectolitres of lime may be employed per hectare on light and sandy soils; and at least double this amount on recently broken-up tracts.

The agency of lime is not merely restricted to effecting the decomposition of organic bodies; it seems established by the experiments of M. Fuchs, of Munich, and the observations of Liebig, that this substance sets free the alkalis which the soil in small quantities contains, and tends to the formation of soluble silicates, which the cerealia so greedily seek. I concur in this opinion, seeing that the cerealia have all of them an abundant amount of silica in their stems, which silica could only have been taken up whilst in the soluble state of double silicates. But how are these double silicates formed? This is a question that I cannot answer, nor can Liebig either. Hitherto no chemist has been fortunate enough to unravel the mysterious chemical operations which continually transpire in the vast laboratory of the earth. This much, however, we know for certain, that the addition of lime to soils which contain alkalis effects certain conditions favourable to the development of cerealia.

In addition to the chemical function already described, lime possesses a valuable mechanical function as a manure. It has a tendency to disintegrate, and reduce to small portions, tough argillaceous masses—into the crevices of which it enters. Hence another great advantage of employing it in argillaceous soils.

I now come to speak of the action of the atmosphere upon soils and plants, an action of diversified effect, and of the very highest importance.

The atmosphere, or layer of air, which surrounds us is composed of oxygen, nitrogen, carbonic acid, and aqueous vapour. Its composition being known, we are in a position to explain the nature of its action upon soils and vegetation. The air and the sun's rays possess incontestibly a chemical and mechanical action upon the soil, and it remains for the agriculturist to offer such conditions as shall be most favourable to the action, by moving about, by spade, plough, or harrow—the soil, and exposing various layers of it to the operation of the air.

It is pretty certain that the nutritive portions of soils are ultimately prepared by atmospheric agency for the digestion of plants; and moreover it is to the atmosphere that we owe the moisture in the form of rain, dew, and snow, so necessary to the function of vegetation.

In addition to the mechanical and chemical agency of the atmosphere just mentioned, it possesses yet another,—a physiological action. It furnishes directly to the leaves and branches of vegetables a nourishment, ordinarily gaseous, and equally necessary to their life as the liquid and mineral nourishment which they imbibe by their roots. And here it is as well to remark that the atmospheric store of nutriment possesses the great advantage over the terrestrial store—that it is inexhaustible. Under the influence of the light of day the green part of leaves and branches of vegetables possess the property of decomposing the carbonic acid of the air, of which gas plants take away the carbon and leave the oxygen. Vegetables, also, contrary to the opinion of the older chemists, absorb a portion of nitrogen. This fact has been demonstrated by Liebig and others.

Perennial plants exist rather at the expense of the atmosphere than of the soil; and hence they resist incomparably better than annuals the injurious effects of poor soils. The former live slowly, take in but little aliment at one time, and find almost a sufficient of this aliment in the air; the latter flourish rapidly, and largely draw upon the nutritive qualities of the soil. This will explain the different conditions of annuals and perennials during periods of drought. If the supply of water fail, and thus the salts and other alimentary matters of soils be prevented finding their way to vegetable roots, then annual plants having many necessities to satisfy speedily suffer from the want; such of their leaves as are nearest to the ground are first to languish and die, the others speedily follow the same course; but the case is different as regards perennial plants, the leaves of which resist the influence of protracted droughts.

For the same reason it is that perennials should not, theoretically, exhaust in the same degree as annuals the soils in which they grow, and practice fully confirms the speculation of theory, agricultural experience fully demonstrating the fact that in exact proportion to the rapidity with which a plant arrives at maturity and dies is its power of exhausting the soil in which it grows. The farmer well knows that he cannot give too much manure to a crop of maize, hemp, beetroot or potatoes, cabbage or tobacco. Other examples illustrative of the same proposition might be easily found.

It follows naturally from what I have said that annuals, and also trees of quick growth, should contain much more alkaline matter than slow-growing trees, for the reason that the two former chiefly derive their nourishment from the air, and the latter from the earth. On account of this richness in alkaline matter, their ashes or refuse ought to be preferred to the ashes and refuse of other vegetable tribes, in any case where some specific principle may not counteract their otherwise good qualities.

Such are the indications of theory; and does not every practical cultivator know that the ashes of vine twigs, of maize, and of potato-stalks are most energetic as manures? Is it not a matter of farming notoriety that cabbage leaves constitute an excellent manure, and that the alkaline ley in which flax has been steeped furnishes an admirable irrigating liquid for meadows?

* M. Regnault and Mr. Thornthwaite in our next.

PROGRESS OF SCIENCE AT HOME AND ABROAD.

TRANSACTIONS OF SOCIETIES, COMMUNICATIONS, &c.

PARIS ACADEMY OF SCIENCES.
Sitting of Aug. 11.

ON THE COMPOSITION OF RICINOLAMIDE, AND THE PRODUCTION OF ANANTHYLIC ALCOHOL AND SEBACIC ACID.

By M. BONIS.

M. Dumas read the following account of the researches of M. Bonis on the composition of ricinolamide, and the production of ananthylic alcohol, two new compounds, arising from the action of ammonia on castor oil.

Castor oil brought into contact with ammoniacal alcohol, or with liquid ammonia simply, forms a solid compound, which represents the amide of ricinolic acid, and to which M. Bonis has given the name ricinolamide. It is a solid body, white, in mamillary crystals, fusible at 66° C., insoluble in water, soluble in alcohol and ether. It burns with a very smoky flame, is not acted upon by potash at ordinary temperatures, but, if heated in contact with a very concentrated solution of potash, disengages ammonia, forming ricinolate of potash. It is decomposed at ordinary temperatures by the acids, which separate the ricinolic acid, and furnish an ammoniacal salt corresponding with the acid employed. Its composition is expressed by the formula $C^{28}H^{55}AzO^4$, which represents the ricinolate of ammonia, minus the elements of water.

The ricinolic acid obtained by saponification is represented by the formula $C^{28}H^{54}O^6$. Analysis of the salts of silver and baryta confirms this composition.

It forms in its reactions secondary products, the formation of which will not be prevented unless particular means are taken. When, indeed, the acid is saponified by the potash, it will be seen that the action does not take place until the moment when the potash, losing its water, begins to fuse; a volatile liquid is then disengaged, with the production of hydrogen. Restoring then the mass of water, and precipitating by hydrochloric acid, a mixture of acids will be seen floating on the surface, the one solid, the other liquid. The difficulty of separating these unknown acids has been simplified since M. Bonis has ascertained that the solid acid was sebacic acid, which is very soluble, as is well known, in boiling water. Sebacic acid thus obtained is white, it crystallizes in small plates, and melts at 127° C. The analysis of this acid is in perfect accordance with that given by MM. Dumas and Peligot.

Ricinolic acid, and sebacic acid, being thus always found associated in this reaction, it became important to ascertain whether these two acids formed part of the amide or sebacic acid now produced at the expense of the other. M. Bonis is now certain that either sebacic or ricinolic acid may be obtained, whichever may be desired. By removing the vessel from the fire at the moment when the volatile liquid begins to be formed, we obtain nothing but ricinolate of potash. By continuing the action until the oily matter ceases to be produced, we no longer find ricinolic acid, but sebacic acid, which has replaced the former. During this latter operation there takes place a disengagement of very pure hydrogen, and the formation of carbonic acid, which remains combined with the potash.

These facts fully demonstrate that sebacic acid is a product of the decomposition of ricinolic acid; direct experiment confirms this. Indeed, by distilling ricinolic acid or ricinolate of potash with very concentrated potash, silicate of potash is formed, together with hydrogen, carbonic acid, and a volatile oil, of which we shall presently speak.

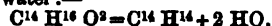
Up to the present time the method of preparing sebacic acid has been by the distillation of oleic acid, or other fatty bodies containing oleine. This operation, repulsive on account of its disagreeable odour, furnishes also but a very

small quantity of sebacic acid. Its preparation by means of ricinolamide takes too much time, the amide requiring two or three months for its complete formation.

M. Bonis next endeavoured to obtain sebacic acid directly from castor oil, and has completely succeeded in his experiment. The results of his experiments prove that, with either castor oil made in France, American oil, or oil from any other source, from 200 to 250 parts of pure sebacic acid may be obtained from every 1000 parts of castor oil. For this purpose all that is required is to saponify castor oil with potash, and to heat the soap with very concentrated potash solution in excess. As soon as white vapours begin to appear the operation is arrested, the soap dissolved in water, and hydrochloric acid added, which separates the sebacic acid, the latter retaining a small portion of liquid acids; boiling water dissolves out the sebacic acid. In this process the disagreeable odour arising from the decomposition of fatty bodies is replaced by the agreeable and aromatic odour of the volatile oil which is produced.

In a commercial point of view, sebacic acid may be applied to several useful purposes if it can be obtained at a low price. Its high melting point, its ready combustion, will readily permit of its addition to certain substances of a more fusible nature in the formation of candles.

M. Bonis next enters into the nature and composition of the volatile oil. It is a transparent liquid, oily, leaving a stain on paper like essential oils, insoluble in water, soluble in alcohol, ether, and acetic acid. Its odour is agreeable and aromatic. This liquid burns with a very beautiful white flame; its density is equal to 0.833 at 19° C. It boils without decomposition at 180° C., under a pressure of 0.760 m. Its composition is in exact accordance with the formula $C^{14}H^{16}O^2$, which should be ananthylic alcohol. Nordhausen sulphuric acid dissolves the liquid, turning it brown; by afterwards saturating the mixture by carbonate of baryta, or carbonate of lime, soluble crystalline salts are obtained. Ordinary sulphuric acid dissolves without colouring it, if care be taken to keep the mixture cool; by the action of moderated heat a very fluid transparent liquid distils over, lighter than water, strongly refracting the light, burning with a very beautiful flame, and distilling without decomposition at 126° C. The analysis of this body indicates that it is isomeric with olefant gas, and its density that of the vapour assigned for its equivalent, $C^{14}H^{14}$. This carburetted hydrogen is, therefore, ananthylene, resulting from the decomposition of ananthylic alcohol, which loses two equivalents of water:—



Fused chloride of zinc effects the same transformation. By distilling repeatedly this volatile oil with chloride of zinc, a carburetted hydrogen is obtained boiling at 126°, having the same odour and the same composition as the preceding. Chloride of calcium dissolves in the volatile oil, producing crystals which undergo decomposition by the action of heat, only the addition of water to the chloride of calcium and to the volatile oil. The combination is less soluble at hot than cold temperatures. Dilute nitric acid transforms the oil into an acid, which begins to boil at 148° C., becoming afterwards decomposed with empyreumatic products, and possessing all the properties of ananthylic acid; concentrated nitric acid gives rise to the products of oxidation of ananthylic acid, and we obtain the prinelic, lipic, succinic, butyric acids, according as the action is more or less prolonged. Acetic acid dissolves the volatile oil, giving it a slight rose colour, which soon disappears. Acetic ether may be obtained either by the distillation of the volatile oil with acetate of potash and sulphuric acid, or by the action of hydrochloric acid on the solution of the oil in acetic acid. Its odour is very agreeable. Liquid hydrochloric acid does not mix with the volatile oil; the latter, however, absorbs hydrochloric acid gas with very great avidity, with great elevation of temperature. Quicklime at an elevated temperature decomposes the volatile oil with hydrogen and gaseous carburets of hydrogen, containing no doubt olefant gas, C^4H^4 ; propylene, C^3H^2 ; Faraday's gas, C^8H^2 ; and marsh gas, C^2H^4 . The action of potassium on the oil appears very complex; there is, however, a disengagement of hydrogen, and the forma-

tion of a white crystalline body, decomposed by water with the production of hydrogen. All these reactions, it will be seen, are sufficiently distinct to allow us to place this body in the class of alcohols, where it should occupy a position between amylic alcohol and ethalic alcohol to form the following series:—

- C⁸ H⁴ O² Methylic alcohol.
- C⁸ H⁶ O² Vinic alcohol.
- C¹⁰ H¹² O² Amylic alcohol.
- C¹⁴ H¹⁸ O² Ananthylic alcohol.
- C²² H³⁴ O² Ethalic alcohol.

ON THE ACTION OF NITRITE OF POTASH ON NITRATE OF COBALT, AND FORMATION OF A NEW COLOUR.

By M. B. ST. EVRE.

M. Chevreul read the following account of M. St. Evre's investigation of the action of nitrite of potash on nitrate of cobalt. When to a solution of nitrate of cobalt, rendered acid by means of nitric acid, a solution of nitrite of potash is gradually added, the disengagement of a considerable quantity of irritating vapours, binoxide of nitrogen, takes place. The nitrate of potash soon crystallizes in the liquor if it be sufficiently concentrated; at the same time it becomes discoloured, and deposits a crystalline, pulverulent matter, of a beautiful indian-yellow colour, corresponding to the yellow of the first chromatic circles of M. Chevreul. The analysis of this substance furnishes numbers which correspond to the rough formula $As^2 O^{10} CbK$. The reactions of this new salt are the following:—Suspended in water, it is not attacked at ordinary temperatures by sulphuretted hydrogen until after a long time. It is not acted upon by chlorine at ordinary temperatures. It is anhydrous, insoluble in water at the ordinary temperature, as well as in nitric and hydrochloric acids, which decompose it only at a boiling temperature with disengagement of irritating vapours. Boiled a long time with water, it at last dissolves, assuming a rose tint, with disengagement of acid and colourless vapours; the liquor, on evaporation, furnishes a new salt of a citron-yellow colour, distinct from the former. Treated by hydrogen gas in a flask heated over a spirit-lamp, it first disengages acid vapours, and subsequently considerable quantities of ammonia. Lastly, on treating the residue with water we obtain metallic cobalt, and an alkaline liquor, which holds the cobalt in solution. Calcined in a current of nitrogen, it disengages binoxide of nitrogen, leaving as a residue a black oxide, which, brought into contact with hydrochloric and oxalic acids, develops chlorine with the one, and carbonic acid with the other. Boiled with solution of potash, it yields an oxide endowed with similar properties. The experiments which have already been made warrant us in considering this new salt of cobalt as likely to furnish the painter with a useful colour, endowed in a very high degree with those qualities so much sought after by artists.

ON THE COMBINATIONS OF METALLIC CARBONATES WITH CARBONATES OF POTASH, SODA, AND AMMONIA.

By M. H. ST. CLAIRE DEVILLE.

In the course of chemical analysis there are employed a great number of reagents with which the precipitation of metallic substances does not take place, save under particular conditions. Thus the operator cannot in general effect the separation of metals by alkaline carbonates, except a great excess of reagent be employed, and the liquid be boiled for a considerable time. This fact, which is still imperfectly known, because all the chemical treatises inform us that the greater number of metallic carbonates are insoluble in carbonated alkalis, merits, nevertheless, special attention, on account of the numerous applications of carbonated alkalis for this purpose in the course of analysis. Very few of the metallic carbonates, in point of fact, resist the solvent action of alkaline carbonates, so that it is pos-

sible, by taking proper steps, to obtain double combinations of the two. As will presently be demonstrated, the double carbonates are very characteristic, occurring frequently under well-developed crystalline forms. From the point of view just indicated I have studied the reactions of most of the metals, iron, copper, zinc, cobalt, nickel, and chromium; all the carbonates of which have the property of uniting with carbonate of soda and potash. I present in my memoir the composition of all these products. In this extract I shall only indicate the general results, and the method of my procedure. The neutral, sesqui and bi carbonates of soda and of potash do not act all in the same manner on metallic solutions, and, indeed, the employment of the two last carbonates furnishes salts which are different even among themselves; and, moreover, the carbonates of soda and potash, which possess such a striking general analogy, in most cases do not always yield with the same metals corresponding salts. Of this their combination with carbonate of copper is an example. If carbonate of copper be introduced into a mixture of the two alkaline salts, the soda will be precipitated almost entirely—perhaps altogether—under the aspect of very brilliant crystals of double carbonate, whilst all the potash will remain in solution. Hitherto I have never succeeded in developing with potash a crystalline combination analogous with the carbonate of copper and of soda. Other metals give rise to similar phenomena.

The general method which I have had recourse to for preparing my samples of double carbonate is very simple: it consists in slowly pouring the metallic salt into the alkaline solution very much concentrated, and constantly agitating the liquor. Ordinarily one portion of the precipitate redissolves, but the remaining portion is transformed into a crystalline mass, the mother water gradually losing a portion of its colour due to the presence of a metal. It would seem, therefore, that the double carbonate becomes insoluble in the alkaline liquor at the expense of which it was formed.

Ammoniacal carbonates yield, with the carbonates of certain metals, combinations, of which some have been studied by M. Favre. I have succeeded in forming them with other metals, and, in particular, with nickel and cobalt, in which double carbonates of ammonia appear to take part analogous with soda and potash. At least certain of my analyses, not yet complete, seem to bear this testimony. Following the mode of procedure I have just described, it is easy to form a double carbonate of ammonia and nickel, by mixing the nitrates of these metals, in contact with an excess of bicarbonate of ammonia in close vessels. We then obtain, under these circumstances, a salt in micaceous scales, and which, by its composition, corresponds with the salt obtained under the same circumstances with bicarbonate of potash. The salt of cobalt appears to be different notwithstanding from the ammoniacal carbonate of cobalt which M. Favre discovered, and to which he very judiciously attributed an exceptional composition to the other series of salts which he studied in detail.

Hereafter I purpose to complete this communication by adverting to other double carbonates which form with slowness, and I may almost say with difficulty.—*Comptes Rendus*, tome xxx., No. 24.

INVESTIGATION OF THE MALADIES WHICH AFFECT WORKMEN EMPLOYED IN THE MANUFACTURE OF SULPHATE OF QUINA.

By M. A. CHEVALLIER.

"Since the communication made by me in November, 1850," remarks the author, "I have made other researches to ascertain if the malady designated by M. Zimmer, of Frankfort, under the name of *quinic fever*, had been observed in other localities.

"Two observations have been communicated to me from Paris and its environs. The first is from Dr. Guérard, who informed me he had received in one of the wards of the Hôpital St. Antoine, about twelve years since, a workman who was employed in a manufactory of sulphate of quina, and who had been afflicted whilst still in the factory with a ter-

tian fever, in the treatment of which sulphate of quina altogether failed. M. Guérard had recourse to salicine, with which he accomplished a perfect cure.

"In the second observation, the patient, also employed in a quinine manufactory, was treated with sulphate of quinine in small doses, and was cured in three days.

"Now, researches have been made in England by Mr. M. Faraday; in Germany by Dr. Bieckel. The results of all these investigations are merely negative. Mr. Faraday acquainted me in a letter, dated December 27, 1860, that, after having himself witnessed the results, he had requested other persons to do the same, but that nothing but negative results had been arrived at.

"M. Schanefels, of Thann, who has been making inquiries in Germany relative to this subject, states:—

"1. That the workmen in one of the most considerable factories of sulphate of quinine at Stuttgart had not, up to the time of his inquiries, experienced any attack of the quina fever.

"2. That all the broken-winded horses that worked in the cinchona bark mills were cured of their malady.

"Relative to the symptoms produced by mechanical filaments of cinchona bark, M. Guérard says that when yellow barks are chosen for operations, and when the bruising process continues several days, the workmen suffer from a disagreeable itching of the skin, similar to that caused by dolichos pruriens. This is attributable to the mechanical action of sharp spiculae penetrating beneath the skin.

"Roscoia.—M. Bouchut, physician of La Pitie, has discovered that eruptions appear on individuals to whom quina has been given in the course of treatment for rheumatism.

"M. Daubeuf adds to the above information by a statement of two similar cases observed by him in 1860. The patients were in the same condition as the preceding—affected by articular rheumatism. They had been treated and cured by sulphate of quinine, administered in large doses. These men during their convalescence had roseolous eruptions for about the space of twenty-four hours, when they disappeared.

"M. Riviere, on the occasion of the announcement of M. Zimmer of his observations relative to the maladies of workmen employed in manufactories of sulphate of quina, proposed the trial of inoculating with the virus of the quinine fever pustule, not merely as a preventive of that disease, but also as a probable means of avoiding the influence of marsh miasm."—*Comptes Rendus*, tome xxxiii., No. 25.

ON THE PRODUCTION OF BARYTA FROM THE CARBONATE OF BARYTA, UNDER THE INFLUENCE OF HIGHLY-HEATED STEAM.

By M. V. A. JACQUELAIN.

Carefully-performed experiments have enabled me to demonstrate that carbonate of potash and soda lose a notable amount of carbonic acid; when heated to redness they are subjected at the same time to highly-heated aqueous steam, or carbonic acid.

These facts being well established, it became of consequence that I should obtain the complete decarbonisation of these two salts in the presence of highly-heated steam; for, if this reaction were verified, it would appear very probable that I should realize a phenomenon of similar order as regards the carbonate of baryta, a substance which experience had satisfied me was more stable, at an elevated temperature, than carbonate of lime, and less stable than those of potash and of soda. With this object in view I undertook a series of experiments, the results of which are appended.

All the mixtures employed in these experiments were merely moistened with water sufficiently to cause an agglomeration of their particles into slightly coherent nodules. The mass to be operated on was then placed upon a platinum tray, and inserted into a large porcelain tube for Nos. 1, 2, 3, 4, 5, 9; on cylinders of cast iron for Nos. 6, 7, 8. Each mixture, being continued at a red heat for six hours, and traversed during that time by aqueous vapour, generated

under ordinary atmospheric pressure, and circulating slowly so as to avoid a carrying over of the alkali.

Exp. No. 1.

gr.
65.0 CO₂, Na O } Complete decomposition. The mixture contained 96 per cent. of carbonate of soda converted into monohydrate of soda. The remainder had become fixed by combination with the sides of the vessel.

Exp. No. 2.

gr.
123.3 CO₂, Ba O } Disengagement of H and of CO₂; semi-fusion of the mixture; decomposition of 10 per cent. of the carbonate of baryta employed.

Exp. No. 3.

gr.
123.3 CO₂, Ba O } Disengagement of carbonic acid; semi-fusion of the mixture; decomposition of 30 per cent. of carbonate of baryta employed.

Exp. No. 4.

gr.
123.3 CO₂, Ba O } Mass slightly porous; decomposition of 50 per cent. of carbonate of baryta employed.

Exp. No. 5.

gr.
123.3 CO₂, Ba O } Mass slightly porous; decomposition of 90 per cent. of carbonate of baryta employed.

Exp. No. 6.

gr.
1200.0 CO₂, Ba O } After the application of fire for six hours there remained a white porous mass containing very little caustic baryta.

Exp. No. 7.

gr.
1200.0 CO₂, Ba O } No decomposition.

Exp. No. 8.

gr.
1200.0 CO₂, Ba O } White porous matter; decomposition of 40 per cent. of carbonate employed.

Exp. No. 9.

gr.
1200.0 CO₂, Ba O } White porous matter; decomposition of 88 per cent. of carbonate of baryta employed.

Comptes Rendus, tome xxx., No. 24.

ON THE ARTIFICIAL PRODUCTION OF DOLOMITE BY THE MOIST WAY UNDER THE INFLUENCE OF MAGNESIAN VAPOURS.

By M. J. DUROCHER.

Already M. Haidinger, and also M. Marignac, have generated dolomite by the moist way; and many geologists, relying upon these experiments, have endeavoured to explain the formation of dolomitic rocks, on the supposition that they must necessarily have taken their existence under the agency of water charged to a greater or lesser degree with magnesia. Nevertheless, according to the ideas of the celebrated philosopher who considered the first of the Alpine dolomites as having a metamorphic origin, and according to the opinion of many other geologists, their formation is stated to be due to magnesian vapours.

The success I experienced in my previous researches on the production of minerals artificially by the reaction of vapours on substances in the gaseous, and sometimes even in the solid or liquid, state, led me to perceive that magnesian vapours ought to be susceptible of reaction upon calcareous stone so as to cause a partial decomposition. I therefore verified my ideas in the following manner. I selected the chloride of magnesium because it is notably volatile, and because it appeared to me that its volatility should be still increased when exposed to a gaseous current; but the necessity of operating under pressure, in a closed apparatus, did not permit me to employ the auxiliary gases, which indeed I found in the end to be unnecessary.

In a gun barrel I placed some anhydrous chloride of magnesium, and also some fragments of porous limestone, in such a manner that the latter could only be affected by the vapour

of the former. The barrel having been firmly closed, and exposed to heat for the space of three hours at a temperature of redness, the calcareous fragments at the end of the operation were found to be enveloped in a fused scoriaceous mass consisting of a mixture of chlorides of magnesium and calcium, with a small amount of oxides of these metals, and oxide of iron. The mass having been carefully washed in many portions of water, the chlorides were dissolved. As regards the oxides resulting from the decomposition of a little of the carbonate, they dissolved also, and sunk in the form of precipitate to the bottom of the containing vessel. Eventually there remained fragments of limestone partially changed into dolomite, as I determined subsequently by means of chemical analysis. The matter being treated by an acid after pulverization, the non-transformed calcareous particles dissolved rapidly, then the effervescence, growing less and less, showed that the carbonate was gradually disappearing. These phenomena, it is well known, are manifested by limestone partially converted into dolomite by natural causes.

The product thus obtained, when exposed to microscopic scrutiny, manifests an assemblage of crystalline and translucent grains, and presents tints varying from blue to yellowish grey, also cavernous orifices just like natural dolomite. In my experiment the gun barrel having accidentally allowed a small portion of carbonic acid to escape the internal pressure was not sufficiently strong to produce that saccharoidal appearance recognisable in the Alpine dolomite. Like many natural dolomites, my artificial product contained a little carbonate of iron, which imparted to it a slightish tint of yellow-grey, and which is the result of a double reaction; for the iron of the gun barrel was a little attacked by the chloride of magnesium, and there resulted the chloride of iron, which in its turn reacted upon the calcareous stone in such a manner as to change it into carbonate; an analogous phenomenon may possibly occur in nature.

This experiment seems to demonstrate that it is not impossible to suppose in geology that the calcareous rocks may have passed to the condition of dolomite under the influence of magnesian vapours, which may have emanated from the depths of the earth, passing through crevices resulting from the disruption of igneous rocks, not merely porphyritic, but granitic, and amphibolic, as well as others.—*Comptes Rendus*, tome xxxiii., 21 Juillet, 1851.

Real Function of the Bile.—M. Blondlet has recently communicated a memoir to the Paris Academy of Sciences, having for its object to prove that the bile is little more than an excrement, having but a small function to discharge, if any. The experiments by which this gentleman arrived at the conclusion are ingenious but cruel. By means of a surgical operation he established in dogs a fistulous connection between the gall-duct and the external skin, so that the bile in no case passed into the alimentary canal. A spaniel bitch thus treated suffered so little in health that she lived five years after the performance of the operation, during which she had several litters, and was always very active in the chase. Eventually she died from the effects of mere age, and an anatomical preparation of her biliary apparatus having been made was deposited in the museum of the School of Medicine at Nancy. M. Blondlet does not deny that the bile may have some physiological function to discharge in the animal economy; his experiments, however, have demonstrated it to be a very unimportant one. Probably he suggests the real physiological function of this liquid may be to saponify in virtue of its alkalinity the fatty matters contained in the feces.

It appeared from an examination of the animals operated upon, that the bile ceased to flow during the time of fasting, but after a meal it became poured forth in abundance.—*Comptes Rendus*, No. 25, tome xxx.

The Muscular Rigidity of Death overcome by the Injection of Warm Human Blood.—M. Ed. Brown-Sequard has for some time been engaged in the performance of some curious experiments relative to the overcoming of muscular rigidity of death by the injection of warm and fresh-drawn blood. His first experiments performed on animals having developed

some curious results, he at length proceeded to operate upon a human corpse. For this purpose he obtained the body of a criminal executed at eight o'clock in the morning, and commenced his injection of blood about seven o'clock in the evening.

Not being able to obtain the necessary amount of fresh blood from the hospitals, the experimenter laid under requisition some of his professional friends, and, the requisite amount of blood being at length obtained, he proceeded with the injection of various isolated parts of the body, the amount of blood at his disposal not being sufficient to permit of the injection of the whole.

The hand and forearm of the corpse were the chief parts operated on, and with the effect of totally destroying the muscular rigidity of death. The experiments are detailed fully in No. 25, tome xxx., of the "*Comptes Rendus*," to which we refer those who require a more detailed account of M. Brown-Sequard's investigation.

Stream Tin and Auriferous Deposits in Brittany.—Lately there have been discovered in the above locality some valuable workings of stream tin, which contain also a considerable sprinkling of gold. Nearly all the littoral zone which separates the disemboisement of the Loire from that of the Vilaine contains a sufficient amount of oxide of tin to admit of profitable working. The oxide of tin contained in these alluvial tracts occurs under the form either of small rounded grains or of crystals, which not unfrequently are as large as nuts. It presents itself under many various colours, black, brown, violet, white, and citron yellow. Almost every part of this stannary deposit of Brittany is accompanied by spangles of gold. At Pirac, at Penestin, and in the valleys situated in the midst of Josselin, the amount of gold is very considerable, although no gold in the condition of ore in mass is found in this part of France. A cubic metre of stanniferous sand from the Côte de Penestin contains from ten to fifteen kilogrammes of oxide of tin and about half a gramme of gold.

In another deposition of stanniferous alluvium, where gold appears to be present in still larger amount than at Penestin, namely, in the valley of Haies, between Serent and Malestroit, another metal has been found, the presence of which had not been suspected in Brittany, viz., mercury, under the form of liquid globules, and also amalgamated with gold and silver. Hitherto the stannary region of Brittany has been regarded as peculiar to the zone of separation between the granitic and schistous formation; but at present the presence of oxide of tin is discovered as far as the middle part of the granitic plateau of Lizio, and the stanniferous deposition is proved to extend to more than four kilometres distance from the granite.—*Comptes Rendus*, ut supra.

Researches concerning the Physiological Action of Atropine.—Signor Lusanna, an Italian practitioner, has lately been performing a series of experiments to illustrate the physiological action of this alkaloid.

Between four and five minutes after the ingestion of a small dose of this substance (1-24th or 1-30th of a grain) the first and most constant effect produced is enormous dilatation of the pupil; a little later, when the action of the alkaloid comes to be more energetically felt, the iris returns to its natural state of dilatation, but becomes totally immovable. If the administration of the alkaloid be discontinued the iris again becomes greatly dilated, and this condition remains sometimes as long as eight days. The return of mobility to the iris is the first symptom indicative of the condition of the alkaloid to act.—*Gazetta Med. Lombarda*, June, 1851.

Bromohydric Ether as an Anæsthetic.—The attention of philosophers has lately been so directed to the consideration of anæsthetic agents from one point of view, namely, their local or general anæsthetic action, that the essential quality on which this action depends has been completely overlooked. Dr. B. Robin, after having determined that chloroform was an excellent means of preserving animal substances, pursued his researches relative to other anæsthetic agents, and has arrived at the remarkable result that those agents, which in the presence of humid oxygen protect animal matters against the operation of slow combustion,

are anti-putrid after death, and, according to the dose in which they are administered, sedative, antiphlogistic, and asphyxiants during life. Thus, according to M. Robin, such of the agents as restrain slow combustion, and belong to the above class, must be necessarily anæsthetic when they penetrate in sufficient quantity into the circulation. Those which are neither acid nor caustic are anæsthetic by inspiration if their boiling point be below 80° , so that their vapours may penetrate the lungs at the temperature of life. If their boiling point be higher than 80° they can only be anæsthetic locally or by application. It is in virtue of these principles that M. Robin devoted his attention to hydrobromide ether, which boils at $40^{\circ} 7'$, which is neither caustic nor acrid, and which preserves an agreeable odour. This ether possesses the characteristics of anæsthetics in general, and of anæsthetics by respiration in particular. On the one part, animal matters do not undergo any alteration, that is to say, are protected from slow combustion, when immersed in this ether as a liquid, or when surrounded by its vapours; on the other part, its vapour rapidly affects animals with anæsthesia.

These facts led M. Robin to believe that bromohydric ether should be a good anæsthetic agent by inspiration, from the analogy which it presents with chlorohydric ether; of which the remarkable anæsthetic properties were discovered by M. Flourens. An ether which produces anæsthesia without excitation, without nausea, but which, on account of its boiling point being a little too high, is not applicable in cold countries, and in the cold season of temperate countries.—*Comptes Rendus, ut supra.*

Febrifuge Tincture of Warburg.—Under this name is employed in Germany, and more particularly in Austria, a compound preparation which enjoys a great reputation as a febrifuge, and of which the composition, according to Pach, Azelt, and Bikert, is as follows:—

R. Hepatic aloes,	4 grammes.
Zedoary,	4 grammes.
Angelica-root,	0.10 centigrammes.
Camphor,	0.10 "
Saffron,	0.16 "
Rectified spirit,	100 grammes.

Digest, and add to every 100 grammes of the strained liquor 2 grammes of sulphate of quina; 20 grammes daily of the mixture is a dose.

Febrifuge Tincture of the Vienna Hospital.

R. Aloes,	45 grammes.
Camphor,	6 "
Orange-peel,	250 "
Rectified alcohol,	7500 "

Digest for the space of eight days, and add to the expressed liquor—

Sulphate of quina,	125 grammes.
Sulphuric acid,	750 "
Laudanum of Sydenham,	45 "

Mix and filter. Eight grammes of the tincture to be taken before each accession of the ague fit.—*Buchner's Repertorium.*

Chemical Record

AND

DRUG PRICE CURRENT.

SATURDAY, AUGUST 23, 1851.

DR. NORMANDY ON THE ADULTERATION OF FOOD AND DRUGS.

THE favourable manner in which our illustrated octavo on Photography, from the pen of Mr. Thornthwaite, has been received, induces us to lose no time in complying more fully with the clearly-expressed desire of our scientific readers to furnish them with another chemical series.

With this object in view we are happy to announce that

we have succeeded in making arrangements with Dr. Normandy for a series of articles on the adulterations of drugs and food. These articles will appear periodically, and, whenever necessary, will be copiously illustrated.

That the subject of adulterations is regarded by the general as well as the strictly professional public to present materials of deepest interest has been sufficiently testified by the favour with which the reports of the sanitary commissioners of the *Lancet* have been received. Our own reports are not intended to supersede or interfere with the disclosures of that journal, but to take up a collateral position which only properly falls within the sphere of a chemical organ. The investigations of the *Lancet* commissioners have been chiefly microscopic—ours will be chemical.

In the course of prosecuting our analytical investigations every important article of food will be subjected to chemical scrutiny, and the process of analysis followed will be detailed. Thus not only will the non-professional member of society be enlightened concerning matters which affect his health and physical well-being, but the student of chemistry will be made acquainted with the most approved modes of analysis for each particular case.

It need hardly be pointed out that the sole use of undertaking an analytical examination of the kind proposed by us depends upon its application, and this application naturally consists in an expression to particular individuals of approval or blame.

This is always a delicate, often a most invidious, task; but still it is one from which a conscientious journalist, having the functions of hygiene to discharge, must not shrink. It will be our endeavour, nevertheless, to adopt such a line of proceeding as shall be pronounced fair, at least, by all—and which will redound to the advantage of every honest manufacturer.

In the first place, as regards adulteration of food, we shall not think it within the scope of our régime to mention by name, or even indirectly, the manufacturer who substitutes one harmless substance for another. This substitution, although a breach of fiscal, is not a breach of chemical, morality; and our journal shall never become a mere agent of secret police. A statement of these, chemically speaking, innocent adulterations, however, shall be made; and analytical processes detailed, by which the sophistications may be easily discovered.

In the second place, as regards the analysis of drugs, we will follow a method of proceeding equally just with the last; but one which is designed to stand on a totally different basis of propriety. When engaged on this portion of our subject, we shall start from the proposition, that he who substitutes one drug for another of different physiological action—or totally devoid of action—is guilty of a high degree of moral turpitude. He sets at defiance the therapeutical calculations of the physician—renders futile all records of past experiments relative to the strength of specific medicines—baffles the medical practitioner, and endangers human life.

Impressed with the grave import of these considerations, we shall stringently deal with the adulteration of drugs. In few cases even here, however, would public denouncement be desirable; a far more effectual course will be to give private and confidential information to all our readers

whom it may concern—relative to the adulterations, demonstrated by analysis—of drugs and chemicals from any particular source.

Having thus laid down our principles of guidance, principles which would seem to be beyond cavil—it remains now to say that, by avoiding the anonymous, and mentioning the well-known name of Dr. Normandy, we at once offer a sufficient guarantee that our analytical investigation will be prosecuted with all due chemical precision—and will be characterized by every propriety.

“ ——— His niger est — hunc tu Romane caveto ! ” — HORACE.

In the physical economy of the world nature abhors all strongly demarcating lines. Under the head of minerals, vegetables, and animals, are arranged all the material creations of this globe; each kingdom impressed with peculiarities,—attributes of its own; so seemingly well defined and individualized each by its proper signs, that to distinguish between a being of this, or that, or the other kingdom of nature is apparently the easiest of all easy tasks. Easy, indeed, it is for all ordinary purposes, and in all ordinary cases. Viewed in the concrete, there exist sufficient means of discrimination; viewed in the abstract, man racks his philosophic brains in vain to discover the fine-drawn demarcating line.

Truly nature is full of harmonies; the more we study her ways the more sensible do we become of the beautiful uniformity of her laws. It is not alone in the material world that we find evidences of the indistinctness of demarcation; the moral world contains the impress of the same law, as he will not fail to see who has tried to discover the precise line which separates right from wrong; virtue from vice; honour from dishonour; honesty from fraud. That such a line exists is a proposition too self-evident for demonstration; but we can no more point out its exact whereabouts than we can lay our finger upon the earth's axis, or plant our foot on the north pole. All that we know in practice is—that the broad features of right are very different from the broad features of wrong; that between the domains of virtue and of vice there is a hazy sort of belt of limits ill defined,—a sort of unclaimed neutral ground to which the practical world applies the various appellations of smartness, expediency, ingenuity, *business*. Somewhere in this hazy neutral ground the line of demarcation lies; its precise locality we know not—and 'tis well.

Now, the result of this economy of nature is such that it keeps people who are desirous of acting with propriety pretty far on the safe side; for the virtue of an individual must be of a low order, indeed,—who, desirous of roaming to the full length of his tether, would range close up to the forbidden ground if he could; and so it follows in the end that many an individual who has gone on incurring no more of the world's quasi censure than is included within the expressions, smartness, acuteness, long-headedness, or business tact,—at length growing over bold from previous ingenuity, so palpably oversteps the boundary line, and ranges so wide, that, returning, he shudders to find himself spurned, disgraced!

Thus the moral government of the world is vindicated in the end; for if hundreds go on year after year in the practice of that questionable morality which custom, and

business, and expediency permit, unharmed by consequences, uncensured by their fellow-men, there occurs, every now and then, in the person of some individual who has egregiously overstepped the conventional line, a victim offered up as an atonement for the vice of all the rest!

If the honourable member for St. Alban's has not violated all precedent of public morality—if he has not largely overstepped the bounds of electioneering propriety by his monetary negotiations with the electors of St. Alban's—we hold him to be at this time one of the most ill-used of men. Turn where we will there is a repetition of the same opinions concerning the measure of the honourable member's morality. Not all the boundless philanthropy of the honourable gentleman, glowing as it would seem with holy fire—not all that gentle kindness which, taking pity on the unexpanded intellects of two untravelled swains, sent them to quaff in their declining years large draughts of cognac and worldly philosophy on the hospitable shores of France—not all the fervent aspirations he breathes for the welfare of his class can shield him from the world's bitter obloquy and scorn. The organs of the public press, whatever the shade of their political opinions—whatever their social grade—have all, each in its own way, passed their meed of censure on the honourable member for St. Alban's. *Punch* first let fly the shaft of his ridicule; the daily press vaguely alluded to St. Alban's liberality, and amongst the country journals there was a subdued murmuring of proprieties violated beyond the limits of human virtue to endure. French journals made known from time to time the satisfactory condition of Messrs. Birchmore and Skegg. Travellers brought back mystic tidings of those aged men, and the public chronicled amongst the annals of extraordinary events the sudden eagerness for travel which came over the two inquiring minds. Here we thought the affair would end, that the disgrace would blow over, that the cry would cease.

The outrageous violation of propriety, however, involved in the unblushing return, immediately after the end of the session, of Mr. Bell's travelled protégés, sets the press again at work; and simultaneously appear two withering attacks in the leading organs of the metropolitan press. The *Chronicle* vents upon him a full meed of indignation; and the *Times*, going farther still, pretty significantly indicates that, according to all propriety, Mr. Bell should be keeping company with his friend Edwards in *Newgate*!

The scientific nature of our functions renders it unnecessary that we should enter into the merits of general electioneering intrigues, however great their magnitude—however signalized by their unblushing effrontery. And although we concede, with the members of the general press, that the St. Alban's doings have largely outstripped all the conventional bounds of propriety—although we admit, with the *Times*, that the fact of Mr. Bell's connection with a sect conspicuous for its strict morality adds intensity to the features of his case—we should have not felt ourselves called upon to make any comments on the matter, were there not a direct scientific interest involved.

The Pharmaceutical Bill, although shelved for the session, must assuredly, in some form or other, be revived when Parliament again meets; and it behoves those who are concerned in this all-important measure to ask themselves the question, whether the honourable member for St. Alban's now holds in the eyes of the world a position at all calcu-

lated to advance the interest of the chemists' assistants? The person who these days incurs the universal ban of the public press may hold himself as politically *dead*. This is now the position of Mr. Bell; and were his nonchalance under the attack tenfold greater than it is—were his stores of that metal to which he has now lent a name, plentiful as they were before the grand educational tour of Messrs. Skegg and Birchmore took place—all would be of no avail. The honourable member may, indeed, hold his seat until the borough of St. Alban's is disfranchised; he may, without suffering personal annoyance, mingle in the world's crowd; but as a public man, we repeat, he is *dead*, and emphatically so, as leader of an educational or scientific movement, such as the Pharmacy Bill involves.

We desire Mr. Bell no ill, and are disposed to make favourable allowances for his errors and omissions. We do not even accuse him of erring altogether, through the force of immorality; but, more favourable than our brethren of the daily press, we believe that gentleman's electioneering obliquities are largely attributable to an undue development of vanity, acting upon an ill-regulated, half-educated, and naturally shallow endowment of mind.

At any rate, the man who, in these days of supremacy of the public press, is individualized with tolerable significance, by a leading daily journal, as fit to keep company with a prisoner in Newgate, is somewhat more than useless as a leader of any scientific movement. If Mr. Bell really has the interests of the chemists' assistants at heart, he should yield to the significant expression of public opinion, resign the management of the Pharmaceutical Bill to other hands,—and, throwing up all connection with the Pharmaceutical Society, should enter into private life.

In one respect we differ from our great contemporary the *Times*, who, in his criticism on Mr. Bell, throws discredit upon the whole community of Friends. One swallow will not make a summer—nor will one electioneering lache damage the public estimation of the Society of Friends. Indeed, if our information be true, steps have already been taken having for their object the absolution of Mr. Bell from all further allegiance to the by-laws of this community. We are informed that,—should the occasion arrive when it might be desirable for the honourable member to clear his reputation on oath, he would be free to adopt that emphatic mode of asseveration. In other words, we learn that Mr. Bell has been disowned by the Society of Friends.

THE HOMŒOPATHIC QUACKS.

A CASUAL reader glancing over the weekly records of homœopathy would take the followers of Hahnemann to be the most ill-used of men. Were we to put faith in their own professions of purity so liberally made at those public meetings where now and then they congregate for purposes of self-laudation; were we to believe in those fervent ejaculations breathed forth for liberty of medical conscience—freedom of investigation—a calm demeanour in argument untinged by vague abuse—the homœopaths would indeed seem hardly death with; nothing can be more just than their request, nothing more unjust than unreasoning abuse directed against the Hahnemannic or any other tenets.

But how stands the case? The homœopaths have advanced again and again all that they have to say in sup-

port of their principles; in defence of what they are pleased to call their doctrines. As often has it been demonstrated that the foundation of their creed is based upon a palpable untruth. The homœopaths appeal to the experience of Hahnemann, and say that the powers of each individual medicine are known by their effects on the human subject. The experiments of Hahnemann are repeated for the sake of verification, and results as mentioned by him are not found to supervene. Judged of by testimony of the same kind, any sane and honest man, or set of men, must necessarily be led to own themselves deceived. Not so the homœopaths, who, by a perversion of every law of evidence held to be binding in parallel investigations, maintain with a vehemence that can only arise from insanity or dishonesty that they are in the right and all other people are in the wrong.

That the whole community of homœopathic practitioners should, under these circumstances, be put down as either impostors or fools can be a subject of wonder to no reasoning member of the chemical or medical profession; but we felt it a matter of regret that scientific organs should have swelled the torrent of this abuse, without holding forth some palpable demonstration of the homœopathic cheat.

Under the impulse of this feeling, we determined to steer clear of the vulgarity of mere abuse, and, suppressing our private sentiments of homœopathy for the time, we signalized one proposition of the homœopaths for temperate scrutiny, giving them what they so earnestly appeared to desire; a fair opportunity for coming forward in their defence.

The proposition on which is founded the title of homœopathy we left untouched; but we selected three others, which, although not included in the denomination of the homœopaths, is an inherent part of their doctrine, and derives a no less illustrious origin than Hahnemann himself. We demonstrated that no one medicine of the homœopathic *materia medica* could be given in that state of purity which the homœopaths assert is necessary for the development of its agency. Instead of argument, a low publication of the homœopaths met us by abuse, and accused us of ignorance of Hahnemannic books. We replied by giving our assailant ample proofs that we had, indeed, made ourselves acquainted with the classic productions of the great founder, and reiterated our chemical proof of the absurdity of that tenet of homœopathy, at least, which we had selected for our criticism. Having, then, done what the homœopaths so loudly professed to desire, having given them a fair field for argument and discussion, and having received vulgarity, but not argument, for our reply, we now feel called upon to record our public conviction that every professional member of homœopathy is either a fool or a knave. The non-professional members of the community can hardly be expected to see the scientific absurdity of what they call the new medical school. But that a medical practitioner of ordinary endowments, and less than ordinary acquaintance with the various sciences of which medicine is composed, can conscientiously believe in the absurdities of homœopathy, is more than we can understand. Involuntarily, therefore, but imperiously, we are driven to offer them the harsh alternative of being considered knaves or fools.

Indeed, the antecedent career of most of the homœopathic practitioners is on record; and the task would not be easy

to individualize one from the list whose reason for leaving the honourable ranks of medicine was not known to his own discredit. As for the dispensers—who call themselves homœopathic chemists—it is needless to say, that no one impressed with the merest outlines of chemistry could reconcile that science with homœopathic tenets. The so-called homœopathic chemists have stepped out of spheres most seemingly incongruous with the delicacy of hand which the globulistic gentry should,—to be consistent,—so eminently possess. One of the most successful of these tritulating philosophers, whose whereabouts we may not indicate, for reasons which will be understood, not long ago drove the flourishing trade of advertisement agent, and only became homœopathic chemist when he found the tide of advertisements running so steadily that way that an eligible opportunity seemed to present itself for the successful working of the dispensing craft. This man is now an adept at trituration, and his medicines are pronounced of the best sort. Amongst his private friends he launches jokes at the mighty master, and laughs at his own successful *fraud*.

REVIEW.

BABBAGE—ON THE EXHIBITION.*

The disgraceful contention in which the Rev. Mr. Sheepshanks was so discredibly mixed up had for its indirect result, according to Mr. Babbage, the interrupting of Government patronage and support of the author's calculating engine. Mr. Babbage had, during the controversy, remained a firm friend of Sir James South, and therefore came in for a portion of the *putting down* so liberally bestowed through the agency of Mr. Sheepshanks.

"It is obvious to all who have observed society," remarks the author, "that such a system of 'discredit' carried on for a series of years, especially against one too much occupied or too proud to expose it, must end in establishing the set of opinions propagated by the party. Honest and even tolerably well-informed persons will at length be misled, and be found to adopt them.

"Opinions thus propagated must have had their influence widely spread, and, unless those members of the various Administrations with whom decisions relative to the difference engine rested had been either highly skilled in mathematical science, or deeply read in human nature, it would have been almost impossible for them not to have been misled.

"The former qualification is unnecessary; the latter is indispensable for a statesman. Of the eight Prime Ministers with whom I have had communications relative to the difference engine, one only personally examined it; doubtless not with the view of criticising the mechanism, but of reading the character of its author. Had my official intercourse with that eminent man commenced earlier or continued later, the fate of the calculating engines would probably have been far different."

With the merits of this question we are not disposed to meddle; so long as the only data before us on which to found an opinion are furnished by the *ex parte* statements of Mr. Babbage himself.

The conclusion of Mr. Babbage's treatise contains some admirable strictures on the injustice with which scientific men are treated in Britain—the inadequacy of their rewards—the vicious circle of reasoning in which it is the fashion for statesmen to argue, when state rewards of

scientific merit become a theme of public discussion. Many parts of the treatise before us, indeed, are lighted up with the fire of poetry, and inspired by the spirit of philosophy; but the book is not what it professes to be—a treatise on the Exposition.

A very foolish ministerial slang has long been current;—in virtue of which the public is made to believe that science is its own reward. By a parity of reasoning it might easily be demonstrated—that to reward merit of any kind is extraneous to the functions of a government; for every meritorious action is productive of pleasure, and in that sense it is its own reward. But pleasurable as this kind of spiritual reward may be in itself, some of the good physical enjoyments of life which are commended by substantial rewards would not in any degree dull those spiritual sensations. Camoens, we doubt not, experienced the solace of pride in the reflection that he had written the only grand epic his nation could boast of, and thus his labours brought their reward; but the reward would have been greatly enhanced had he in his old days been enabled to enjoy the luxury of a full meal, instead of being allowed to starve! Mr. Babbage dissipates the sophistry of the self-rewarding argument in another manner:—

"Those who maintain that science is its own reward," he says, "cannot have remarked the vicious circle in which they reason. The delight derived from discovery is indeed a high intellectual reward, but the force of this maxim is only known practically to those who have already advanced in the career of discovery: it can, therefore, never direct the inquirer into that line. All men are subject to the same feelings and passions. It is assuredly true that men of wealth and rank will be happier if they cultivate their faculties, and add to the amount of human knowledge; but they cannot be aware of this truth until they are considerably advanced; consequently it cannot have induced them to commence this cultivation.

"But it is for the interest of those who are the consumers of knowledge that all other minds should be induced to advance it: therefore it is our interest to place even before the highest classes, at the commencement of their career, motives for its pursuit. Having raised such expectations, justice requires us to fulfil them; nor can we regret that the advantages derived from the course into which we have invited them should have proved beneficial to them beyond even the limits of our prediction.

"It is of the very nature of knowledge that the recondite and apparently useless acquisition of to-day becomes part of the popular food of a succeeding generation. Thus the nobleman who spends his wealth in constructing unrivalled instruments, and his nights in scrutinising with them the remotest boundaries of space into which human vision has yet penetrated, is preparing a source of pleasure and happiness for the descendants of those very peasants whom his practical skill in engineering has raised by his own instructions above the ranks in which he originally found them.

"Another question has been raised, but not yet answered, respecting those pensions which have been awarded for scientific discoveries. A certain definite limit has been fixed by practice, which has never yet been exceeded in pensions assigned to science. The sum of three hundred a year, the maximum of reward to science, is almost the minimum of reward for other services.

"The most important question is, whether these pensions are given as the reward of scientific services rendered to the country, or as charity to enlightened and studious persons who happen to be poor? In the one case, they are an honour which a philosopher may be proud of receiving from his country: in the other, they are no more than a higher order of pauper relief, which an independent gentleman can scarcely condescend to accept.

"Another important question, though of a different nature, also arises here. Are these pensions, thus small in amount, fit to be offered to those who, in order to arrive at their discoveries, have themselves in some cases spent out of

* *The Exposition of 1851: or, Views of the Industry, the Science, and the Government of England.* By Charles Babbage, Esq., Corresponding Member of the Academy of Moral Sciences of the Institute of France. London: John Murray, Albemarle-street, 1851.

their own private fortune sums far larger than the fee simple of the rewards thus offered to them.

"Is it just that the same rewards should be given to persons filling well-endowed scientific offices, supplied with all the means of discovery which the most perfect art can produce, as to other philosophers, who, at the expense of their own personal comfort and perhaps of the interests of their family, have purchased the costly means by which they have succeeded in equally improving their several departments of science?"

"For the honour and the advancement of science, it is necessary that these questions should be distinctly answered. It is to be hoped that some independent member of Parliament will at last press them in a manner which no ministerial shuffling can evade."

In his final chapter, "*On the Rewards of Merit*," the author details the various circumstances attendant upon the extension of the Order of the Bath:—

"On the 25th May, 1847, there appeared in the *Gazette* letters patent under the great seal reconstituting the Order of the Bath. It was announced that it should consist of two divisions, the Military and the Civil; each division comprising three classes. This memorable document was accompanied by certain regulations as to the number of each class of the knights, followed by a new set of thirty-seven statutes, which it declares 'shall henceforth be inviolably observed and kept within the said order.' But throughout these 'inviolable' statutes scientific merit is not even mentioned as a qualification.

"In the civil branch of the order the qualification for the first class is prescribed by the eighth statute, and the tenth and twelfth statutes distinctly refer to the same. The only qualification to be found in the statutes applicable to either of the three civil classes is when, referring to the first class of the order, it is stated that—

"No persons shall be nominated thereto, or to either of the other two civil divisions of this order, who shall not by their personal services to our crown, or by the performance of public duties, have merited our royal favour."

From which it is evident that the investiture of this order was never contemplated to take effect on any save Government employés, thus rewarding them, not because of their scientific merit, but because of their official situation. The injustice of this is sufficiently manifest, and our author's criticism scarcely too poignant. We wonder, however, that a philosopher like Mr. Babbage condescended to deal with the large question of scientific recognition on so limited a field as is presented by appropriation of the Orders of the Bath. We should have expected that the author would have taken higher ground, and have claimed for science an equal recognition with law, divinity, or war. This is our view of the case, and, looking dispassionately at the question in all its bearings, we do not see any other issue. With the abstract question, what should be the means employed by a Government for the recognition of highest merit, we do not deal. At present this means of recognition for law, and war,—and divinity may be added in an oblique sense,—is the peerage; therefore we argue, according to all justice, the same reward should be the recognition of the highest order of science.

Many of those who urge that science should be its own reward will not like the practical home thrust contained in the following:—

"When men state a principle, the best test of their sincerity is to be found in their application of it. We may ourselves utterly repudiate a principle, and yet be unable to show that it is not sincerely believed by those who assert its authority. Man cannot dive into the mind of his fellow-man and witness the internal conviction he asserts; but he can always examine the fairness with which he applies that principle.

"Now, if the lofty dignity of science is such that it is

from its very nature incompatible with wealth,—if decorations and titles are entirely unworthy of its legitimate ambition,—then, as a necessary consequence, all pursuits of a higher order are still more absolutely excluded from such vanities.

"Is it consistent, therefore, with these opinions to maintain that the ministers of a Christian Church, who interpret to us the word of God, should receive payment for their labour, rank for their exertions, and, in some instances, even the very ribbons so contemned; whilst those who make us intimately acquainted with the works of the Almighty, who discover to us the laws which he has impressed on matter, and thus add to the physical comfort, the intellectual pleasure, and the religious feeling of mankind, should be compelled to exercise those rare endowments, only by the sacrifice of fortune and the renunciation of all those enjoyments, rewards, and honours, which the ministers even of the purest creed receive without reproach?"

"But these are the opinions of the shallow and the thoughtless. The pursuits of mind may modify, they can never obliterate, the instinct, the feelings, or the passions of man.

"The consciousness of power, and the conviction of its successful exertion, exist undiminished by the neglect or the ingratitude of the country he inhabits. The certainty that a future age will repair the injustice of the present, and the knowledge that the more distant the day of reparation the more he has outstripped the efforts of his contemporaries, may well sustain him against the sneers of the ignorant, or the jealousy of rivals."

We shall take leave of Mr. Babbage's volume by making one more quotation, which struck us, we confess, with deep portentous awe. The questions which he proposes are not new; we have seen them before, but from how different a class of men!

Amidst the ravings of demagogues, the sanguinary threats of red republicans, these following questions have met our eye. It is new, however, to witness them as coming from a philosopher. Do we blame Mr. Babbage? By no means; we hold mind to be paramount; we claim for it every supremacy; and, apart from any alliance with violent disturbers of the world's peace, we tell our governing ministers, of whatever politics, that, when men of Mr. Babbage's stamp begin to discuss the following propositions, it is time to look about, and, by offering moderate concessions, to avert in time the consequences which will else inevitably arise, should the injured bands of science lend their powerful aid to the politically disturbed sections of mankind:—

"A party which first refuses to science the means of acquiring competence,—then excludes it from personal honours because it has already been denied official position,—and which refuses it hereditary rank, because it has not devoted itself to the acquisition of wealth, will naturally cause questions to be raised as to the expediency of different forms of government.

"Of what class, it will naturally be asked, are the persons who have made such laws?"

"Is the possession of hereditary rank at all necessary for the government of the country?"

"At a distant period, and under a less complicated form of society, the obvious disadvantages of appointing a legislator for life from the accident of his birth, instead of the fitness of his talents, might have been tolerated under the influence of force. It has since been consecrated by established usage, and some of its evils mitigated by the continual infusion of fresh blood into decaying stocks. But at the present day, and amidst the multiplied relations of highly civilized life, the question whether an upper chamber ought to be hereditary, or appointed only for life, is one upon which nations as well as philosophers avowedly disagree.

"In a very few years this great question will come to be more thoroughly investigated, and those who now advocate the continuance of existing institutions will then have enough on their hands, without rashly forcing, by injustice

and insult, both talent and interest into the ranks of their opponents.

"At present it is sufficient to call attention to a statement often made, that a chamber of peers for life is incompatible with the existence of a limited monarchy. This, like many other party dogmas, is a mere gratuitous assertion, put forward to alarm the timid who have experienced the advantages and are anxious for the continuance of that form of government."

ANSTED ON GEOLOGY.*

In obedience to the popular movement in favour of little books, Professor Ansted has furnished us with a convenient manual on geology, instead of reissuing another edition of his two-volume 8vo. work on the same subject, published in 1844; and, with the object in view of accommodating his labours to the necessities of that class of readers to whom chemistry and mineralogy are unfamiliar, the author, beginning with the threshold of his subject, furnishes a sufficient amount of these sciences to serve as an introduction to geology, properly so called.

He has also enlarged much more on the important subject of physical geography than most other geological writers; devoting a specific part of his treatise to this division of science, where will be found some of the most valuable details of Berghaus, Humboldt, Lyell, and other voluminous authors; details only accessible by wading through a mass of publications inaccessible to all but the most unoccupied or the most strictly professional readers.

Throughout the volume before us Mr. Ansted has kept the fossil department of his subject in subordination to the portion devoted to rocks. In the propriety of this course we heartily coincide. The study of fossiliferous deposits is in itself so interesting—possesses such attractiveness for the geological reader—that not unfrequently is he led away by their too exclusive consideration from the more practical, and it may be said more important, branches of geological science.

The work opens by a succinct resumé of leading facts of chemical philosophy. First, a slight sketch of the imponderables is given; then in a list is appended a tabulated view of ponderable elements, and their chief natural combinations. This part of the volume is sufficient for the purpose intended, although the chemical nomenclature is occasionally devoid of that strictness which would be expected in a pure chemical book. As an instance of this we may cite line 7, p. 28, where the term *chloride of magnesia* occurs instead of chloride of magnesium; this line is marked in the errata list on account of a numeral error, but the error of chemical nomenclature has passed unheeded.

Impressed with the one leading desire to render his book eminently practical, and being free from that ill-directed pride of authorship which, rather than make quotations, will transpose whole pages of other books into equivalent language—Mr. Ansted very honestly, and very usefully, does not hesitate to make a long literal abstract from kindred writers wherever his purpose is subserved thereby. Far from mentioning this to the author's disadvantage, we think the proceeding creditable to himself, and complimentary to the author from whom he has quoted.

But it is time that we should give our author an appearance—for which purpose we extract a portion of his chapter on atmospheric and oceanic currents, from which a general notion of his style may be obtained:—

"80. We have hitherto been considering the condition of

* *An Elementary Course of Geology, Mineralogy, and Physical Geography.* By David T. Ansted, M.A., F.R.S., &c., Professor of Geology in King's College, London; Lecturer on Mineralogy and Geology at the H.E.I.C. Mil. Sem. at Addiscombe, and at the Putney College; late Fellow of Jesus College, Cambridge. London: John Van Voorst, Paternoster-row, 1859.

matter forming the earth's crust, as presented in a certain definite shape at a given instant. We have also considered certain forces which may be regarded as causes of change, but nothing has been said of change itself; and in advancing to this, which is perhaps the most important department of physical geography in relation to geology, we shall find it convenient to recognise changes of two kinds: the one, a mere movement of particles without any modification of the mass, or the change of place observed by the particles of air and water when set in motion and seen in some mineral substances during decomposition; and the other, a distinct and mechanical alteration in the form or position of the solid matter, as induced by the rubbing, grinding, tearing up, and rolling or carrying along of earth, mud, or stones. In the present chapter we shall consider only the former kind of changes, and these no more than as they really affect the latter kind. In other words, we shall consider the air and water, and their movements, as agents of mechanical change in hard rocks.

"81. The earth, constituted as we know it to be, and revolving round its own axis, and also round the sun, which is in some way an exciting cause of light, heat, chemical action, and electricity, the different parts of the surface are exposed periodically to the action of these rays; and, as different substances and different forms of matter are variously acted upon by the same amount of exposure, there is constantly a circulation of the atmosphere produced, accompanied by heat, and conveying along not only heat, but a large quantity of moisture, over the earth. There is also a regularly alternating exposure to the stimulus of light, and a similar daily and even hourly change in the electric state of the air and earth. The mutual action of these changes, and causes of change, complicates so greatly the actual phenomena of what is called weather, that it is proverbially the thing of all others least to be depended on, and in most temperate climates has come to be regarded as governed by no laws yet ascertained, and affording no appearances by which we can predicate future consequences. Perhaps the simplest and most satisfactory method to adopt in this place will be, first, to discuss the relations of the atmosphere to water, or the appearances sometimes called aqueous meteors; then, the movements of the air, especially those chiefly referable to simple and known causes; and, lastly, the results of the movement of masses of air differently charged with aqueous vapour, and in different electrical conditions, when either impinging upon other masses of air or moving over irregular surfaces of land. Under these three heads may be brought most of those facts of meteorology, the knowledge of which is essential to the geologist.

"82. The atmosphere presents a mixture of gases, of which oxygen and nitrogen form the principal part; but, although the proportions are nearly invariable, the gases do not form a definite chemical compound. It may be considered that pure dry air contains in 100 parts by weight 23 parts of oxygen, and 77 parts of nitrogen gas, the proportion hardly varying to the extent of one per cent. under any known circumstances. Ordinary atmospheric air contains, in addition, about five parts in ten thousand of carbonic acid and carburetted hydrogen gases, besides a very variable, and often rather considerable, proportion of aqueous vapour, and other substances, which are usually regarded as impurities, but some of which, as ammonia, seem very essential to vegetation, and are probably always present.

"83. The air being highly elastic, its density is greatest at the earth's surface, and at the height of about 2½ miles (11,566 feet) the density is halved, or one volume is expanded into two, so that at such an elevation the barometer (which measures the density of the air by finding the length of a column of mercury effecting the same pressure, or balancing the pressure of the air) only shows a height of one half that which it showed near the sea-level. The density is again halved at about every 12,000 feet of additional elevation, and at an altitude of 45 miles the air would scarcely exhibit any sensible density. It probably extends much further, but is certainly limited, as, at the height of about three diameters, or 24,000 miles, the centrifugal force would counterbalance the force of gravity.

"84. If the atmosphere were everywhere of the same density as at the earth's surface, its height under ordinary conditions, the barometer standing at 30 inches, would be about 5-208 miles (26,500); and as 100 cubic inches of air, deprived of aqueous vapour and carbonic acid, at the temperature of 60° Fahr., and under pressure of 30 inches of mercury, weigh 30·83 grains, we can determine the weight of the whole body of pure dry air to be about 4,845,210,000,000,000 tons.

"But in estimating the mass of the atmosphere we must also take into account many other substances generally present. Thus there is a certain amount of aqueous vapour, very variable in different places, but measurable on a general average. So, also, there is a sensible proportion of carbonic acid, carburetted hydrogen and ammonia, and a trace of many other substances. These altogether will appear as follows, separating the oxygen and nitrogen, and estimating the absolute weight in tons:—

	Weight in tons avoirdupois.
Nitrogen	3,750,813,700,000,000
Oxygen	1,094,896,300,000,000
Water	50,000,000,000,000
Carbonic acid	3,037,200,000,000
Carburetted hydrogen	1,000,000,000,000
Carbonate of ammonia	250,000,000
Various substances	50,000,000

Total 4,899,247,500,000,000 tons.

"Under the last head, 'various substances,' are included sulphuretted hydrogen, sulphurous, sulphuric, hydrochloric, and nitric acids, the odoriferous principles of plants, the miasmata of marshes, various gases liberated in manufactories or by volcanoes, besides potash, soda, lime, magnesia, iron, manganese, &c. The estimate of the quantity of water is very doubtful, but is based on the only calculations that have yet been made.

"85. It is owing to the chemical condition of the air, as a mixture of dry gases with aqueous vapour, and to the never-ceasing changes in temperature and electrical state thus induced, that we owe the most remarkable of its phenomena. It is, however, well ascertained that, notwithstanding the constant absorption of many of its parts by organized beings, often to an enormous extent, the relative proportion of the principal gases is very permanent, as air taken from various parts of the earth, and from various altitudes, has been found to present no appreciable differences in this respect. The quantity of oxygen varies slightly in different seasons, and is rather larger near the surface over the sea than on land.

"86. Humboldt has mentioned as the principal features of a general descriptive picture of the atmosphere, 1st. Variations of atmospheric pressure; 2nd. Climatic distribution of heat; 3rd. The humidity of the atmosphere; and 4th. Its electric tension. Under these heads it will be convenient to consider the facts that bear on geology.

"87. The pressure of the atmosphere is simply the gravitation of the whole mass of matter of which it is made up to the whole mass of the earth. On an average of years it is the same in similar climates at equal distances from the surface, but exhibits many periodic and temporary oscillations. It becomes gradually less at greater heights as the mass of the atmosphere which presses is there less. The pressure is the same in all directions, as that of any gas or fluid must necessarily be; and thus, though equivalent to about fifteen pounds on every square inch of surface, it is not felt unless the air on that surface is removed. The pressure has been hitherto most conveniently measured against a column of mercury or other fluid, and it is found that about 30 inches of mercury, or 34 feet of water, balance that of the whole atmosphere. When from any local or temporary cause of change on the same horizontal plane, or by any elevation above that plane, the pressure is altered, that of the column of mercury or water corresponding to it must be altered likewise; and thus the fluid in the barometer falls or rises as the pressure of the air diminishes or increases. Careful and tabulated records of the nature and amount of barometric change exhibit three kinds of these oscillations, viz., diurnal, annual, and irregular. The daily oscillations present

two maxima (one at about 9 h. a.m., and the other about 10½ h. p.m.), and two minima (at about 4 a.m. and 4 p.m.), which within the tropics are attained with almost perfect regularity, undisturbed by storm, tempest, rain, or earthquake, at all elevations from the level of the sea up to 13,000 feet. Towards the poles, and at great elevations in temperate climates, this regularity is diminished, and at length lost, or even perhaps inverted. The amount (or amplitude) of the oscillations varies greatly, but is most considerable near the equator, amounting there to about $\frac{1}{10}$ of an inch.

"88. The second kind of barometric oscillation is that observed during the successive months of the year. In warm climates north of the equator the mean pressure diminishes gradually from winter to summer throughout the year, on the east coast of the great continent from December to June, in India and at Cairo from January to July, and in the West Indies from January to August, the range being about 0·63 inches. In the north temperate zone there are two minima, one near the time of each equinox, the summer maximum being, however, lower than that of winter.

"89. Their regular oscillations of the barometer are far less readily explained and described than those periodic ones we have been considering. They depend on certain winds, on geographical position, on the fall of rain, and on the electric tension of the atmosphere. The former conditions will be best understood by reference to the subjoined table of the mean barometric pressure under different winds in the neighbourhood of London; and, although anomalies sometimes occur, especially in the interior of continents, it may be concluded that the barometer is generally highest, *ceteris paribus*, when winds blow from the pole, and from the interior of continents, and lowest when they come from the equator or from the sea.

"A table of this kind is called the *barometric wind-rose* for the place in question. The following is the barometric wind-rose for London:—

North	29·890 inches
North-east	29·949 "
East	29·879 "
South-east	29·796 "
South	29·700 "
South-west	29·734 "
West	29·814 "
North-west	29·844 "

Mean

29,826 inches
 "90. Geographical position, or position with reference to the vicinity of the sea, wide tracts of desert, lofty mountains or extensive plateaux, produces great modifications in the pressure of the atmosphere, and therefore in the height of the barometer, so that the total mean amplitude or range of the barometer during the whole year, or the summer and winter halves of the year, varies extremely in different districts, being greatest, so far as observations show, in Iceland, where the annual range amounts to 1·4137 inch, and smallest at Batavia, where it is only 0·1173 inch. It will be understood that the actual range on particular occasions is often very much greater than these figures show, the winter range being generally higher than the summer.

"91. The temperature of the atmosphere is greatest at the earth's surface in any district, and diminishes at the rate of about 1° Fahr. for every 350 feet of elevation near the earth, but not so rapidly at great altitudes. At a certain height, however, the region of perpetual congelation is reached in every climate; and if the mountains are sufficiently lofty this is manifested by their snow-capped summits in the middle of summer. Generally the snow line, as this limit is called, is at the height of 15,000 feet at the equator, 3800 feet at 60° latitude, and only one foot at 75°, but there are infinite local modifications of the general law, one of the most striking occurring in the Himalayan mountains, where the snow lies on the southern declivity at about 15,000 feet, although on the northern, which might have been expected to show the coldest temperature, it is not met with till we reach 20,000 feet. The causes of this decrease of temperature in the upper parts of the air are, 1st, that the air in these

regions is expanded, and the quantity of heat in a given area near the surface is, therefore, distributed over a much larger area as we ascend; and, 2nd, that a great part of the heat of the atmosphere is obtained by contact with the earth's surface, the sun's rays being absorbed but little while merely passing through the air. The temperature of the air, as dependent on that of the subjacent earth, varies, of course, according to climate and season.

"92. The condition of the atmosphere with regard to moisture varies very greatly at different hours and seasons, and in various places; but we may consider generally that dry air of a given temperature is capable of holding in suspension a certain limited quantity of aqueous vapour, and that when the temperature is diminished the capacity for retaining water is also diminished. When, therefore, warm air fully charged with vapour comes in contact with a cold surface, or with a cold stratum of air, it is chilled, and part of its vapour must be precipitated; either as dew on some solid substance present to receive it, or in small drops or globules of water often still retained in the form of visible vapour, either as mist or fog; or else as clouds wafted along by winds, and depositing their load at a great distance from the spot whence it was evaporated. It may well be supposed that over the sea and large fresh-water lakes the air is always in a state of saturation. On coast lines also it remains almost fully charged with moisture, but in the interior of continents the conditions are often very different; so that there are some districts having seasons of incessant rain, others where rain may fall at any time, and others again where no rain falls, and where the air is, therefore, invariably dry. The air at the surface, especially in temperate climates, is, however, by no means always in the same state as that a few hundred feet above; and the meeting of two currents high in the heavens will often produce a change not indicated by instruments or appearances near the earth.

"93. The quantity of water distributed over the earth's surface after being conveyed through the air in clouds is very large; far larger indeed than could be supposed without careful investigation. It is the actual quantity of rain falling in a given time that enters into such calculations, and for the purpose of measuring its amount various instruments have been contrived. These show, 1st, that while mountain districts on the whole receive a larger quantity of rain during the year than plains, yet in any place of moderate elevation more rain falls near the surface than above it; 2nd, that a larger quantity falls on coast lines on the western side of great continents in the temperate zones than on the eastern side or the interior, but in the tropics more on the eastern side; and 3rd, that more rain falls in tropical than in temperate climates, though the number of days on which rain falls is greater in the latter than in the former case. In the tropics, even in the rainy season, the rain falls chiefly during the day; but in temperate climates indifferently by day or night.

"94. Within the tropics there is a rainy and a dry season; and in the tropical countries of the New World the mean annual fall is about 115 inches, while in the Old World it is not more than 76 inches, giving a general mean for the tropics of 95½ inches. In the temperate zone of the northern hemisphere there is a less difference between the eastern and western continents, the mean being 37 inches, but the extremes in each case exhibit very wide ranges. In the south temperate zone the fall averages 26 inches only, and in the frigid zones it has not been measured with sufficient accuracy, but is very much smaller. It would appear that between three and four times the total quantity of water retained at one time in the atmosphere in the form of invisible aqueous vapour or cloud falls annually on that portion of the earth's surface marked by the presence of land; a striking proof of the frequency of change in the condition of the atmosphere in this respect, and the rapid transmission of aqueous vapour through it.

"The following table will give the distribution and absolute quantity of water falling on the land in different districts of the earth according to the latest and best estimates. It must be understood that in the two frigid zones, and,

indeed, in the temperate zones, the estimate includes the whole fall of water, whether as rain or snow:—

	Area of land in sq. ms.	Total annual rain-fall. in cubic feet.	in tone weight
N. & S. Torrid zone	19,400,000	4,282,750,000,000,000	119,177,000,000,000
N. Temperate zone	26,150,000	2,169,500,000,000,000	60,000,000,000,000
S. Temperate zone	4,350,000	961,500,000,000,000	7,275,000,000,000
N. & S. Frigid zone	2,600,000	70,250,000,000,000	2,000,000,000,000
General total	51,500,000	6,775,000,000,000,000	188,452,000,000,000

"95. The electric tension of the atmosphere is constantly undergoing great disturbance, being affected by every change in its humidity and temperature. The phenomena of storms, not merely of thunder, but of rain and wind, are intimately connected with, and dependent on, these modifications. Even the deposit of dew, the gentlest of atmospheric changes, as well as the formation of mists, fogs, and clouds, and the falling of rain, snow, and hail, must be regarded as both consequent upon and causing great electric disturbance. When serene the atmosphere almost always indicates positive electricity.

"96. Violent storms occur frequently in the tropics, and are called hurricanes, tornados, and typhoons, but they are generally much limited in extent and direction. They advance from one point with a powerful and rapid gyratory motion combined with a direct progress; but, while the latter is often not more than eight or ten miles an hour, the former is sometimes 50 or 60 miles, or even more, producing destruction in the course of the storm from the irresistible force acquired by such extreme rapidity. All of them are referable to electrical changes, which have been generally induced by great and unequal distribution of heat. (See § 103.)

"97. Winds or currents of air are produced whenever the atmosphere is set in motion, in consequence of one part being displaced by some local cause and another part rushing in to supply the vacant place. Winds keep the atmosphere permanently in a state of complete mixture of the component parts. They help to purify it by removing miasma and exhalations locally injurious, but admitting of such dilution as to be ultimately harmless:—they favour and assist in the fecundation of plants by the distribution of pollen:—they modify and equalize the temperature of various parts of the surface:—they convey clouds, and thus distribute moisture, and render the interior of continents fertile; but sometimes they carry with them poison and death, for they bear along the insects and the blight that often destroy the hopes of the husbandman, and the fever that baffles the skill of the physician.

"98. Generally if two districts are unequally heated a cold wind will set in near the surface from the less heated to the more heated district, while a corresponding current in the opposite direction takes place in the upper regions of the atmosphere. Thus, when the sun shines during the day, and land and water are equally exposed to its influence, the land is more heated than the water, and a cool breeze is soon felt setting in landwards; while in the evening, when the sun has set, and the greater radiance cools the earth sooner than the water, the converse takes place, and in this way is readily explained the phenomena of land and sea breezes, and the numerous apparent anomalies observed in local prevalent winds.

"99. The trade-winds are likewise periodical winds, occurring near the tropics in the open ocean. The portion of the earth near the equator is the hottest part of the globe, and the air over it is therefore more heated than elsewhere, while, on the other hand, the regions near the poles are exposed to perpetual cold. There is thus induced a constant cool current near the earth, setting southwards from the north pole, and northwards from the south pole, and constant warm currents above this cooler one, proceeding from the equator towards each pole. These would be distinctly observable everywhere but for the revolution of the earth round its axis from west to east, which alters such currents, and produces a tendency to north-east winds in the northern and south-east in the southern hemisphere. But now comes into play another result of the condition of the atmosphere, for the wind, advancing along the surface from the poles northwards or southwards, must, as it approaches

nearer the equator, arrive successively at points which move more rapidly than itself, as the air at the equator and poles, in each case, moves once round the earth in every twenty-four hours, but near the poles the circle of its motion is very small, while at the equator it is enormously larger. Thus it results that at certain latitudes the winds blow constantly from the east, instead of north-east, and this direction is pretty uniform between the twenty-eighth parallel on each side of the equator, except that near the equator (between the third and ninth parallels of north latitude) there is a region of calms and variable winds, alternating often with violent storms.

"100. The north-east trade-wind is less steady in the Atlantic than the south-east, probably because of the more confined condition of the northern part of that ocean. In the Pacific this wind does not seem to extend beyond about 140° west longitude, that is as far as there is open sea. The multitude of islands and coral banks in the rest of that portion of the tropical sea, and the land of the great continents, both in the Old and New World, preventing these regular winds from being perceived, and introducing a multitude of local and distinct currents.

"101. The trade-winds, interrupted in their course by the distribution and form of the land in the Indian Ocean, pass there into periodical winds called monsoons, which blow from the middle of April to the middle of September in one direction, and from the middle of October to the middle of March in the opposite direction. North of the equator the former are south-west and the latter north-east winds, and south of the equator the summer monsoons are south-east, and those of the winter north-west. The change takes place gradually, beginning in the upper regions of the atmosphere and being often accompanied by storms. Monsoons of less perfect character occur on the coast of Brazil, in the Gulf of Mexico and elsewhere, and other periodical winds known by various names are common on most shores.

"102. Beyond the limits of the trade-winds in the temperate climates of both hemispheres, wind more commonly blows from some one direction than any other, and every country has thus what are called *prevalent winds*. South-west and north-west winds prevail near the surface in the north and south temperate zones respectively, and in each case there are return-currents in the upper regions of the atmosphere.

"103. Storms of the nature of hurricanes are rarely met with beyond the torrid zone, and they chiefly occur or commence near the tropics. In the northern hemisphere, the region of the West Indies, and in the southern, the south-western part of the Indian Ocean, or rather the islands there situated, are the principal foci whence have proceeded the most violent storms on record. They move on the north side of the equator from east round by the north point of the compass to west (from right to left), and in the southern hemisphere in the opposite direction (from left to right). In the former district the storm season is in the autumn months, extending through August, September, and October, and including, though rarely, June and July. The storms range from latitude 13° to 50° north, and longitude 50° to 100° west. In the Indian Ocean they prevail chiefly from December to April, occurring also, though seldom, in May or November, and in that part of the world they range from the coast of Madagascar to that of Australia. The ordinary hurricanes seem to extend over a breadth of from 500 to 1000 miles in the Atlantic and of about 600 miles in the Indian Ocean. Storm waves and temporary currents (storm currents) seem often to accompany a hurricane at sea, the former being true waves raised above the level of the sea, and carried along with the storm in its onward course, and the latter consisting of a rotating stream in the centre of the storm. Torrents of rain, and explosions of thunder, with vivid flashes of lightning, have been generally observed to accompany hurricanes. The typhoons of the China Sea have the same range of latitudes for storms (10° to 50° N.), and extend from the coast of China to longitude 150° east. They occur once in about three or four years. The deserts of Africa, some of the plains (llanos) of South America, and part of Australia, are exposed at times to hot winds, which are of the nature of tornadoes, and are

(To be continued.)

HUNT ON PHOTOGRAPHY.*

It is common enough to say a book is prettily got up when the reviewer is unable to praise its contents, and yet feels too good humoured for censure. We say Mr. Hunt's book is prettily got up, for a different reason, considering it a matter of supererogation to speak favourably of a treatise on photography by Mr. Hunt, a gentleman who has so long, so ardently, and so successfully laboured in this scientific domain. Of the chapter on the choice of photographic paper we extract a portion for the benefit of our readers:—

"Unsize paper has been recommended by some, but in no instance have I found it to answer so well as paper which has been sized. The principal thing to be attended to in preparing sensitive sheets is to prevent, as far as it is possible, the absorption of the solutions into the body of the paper—the materials should be retained as much as possible upon the very surface. Therefore the superficial roughness of unsized sheets, and the depth of the imbibitions, are serious objections to their use. It must not, however, be forgotten that these objections apply in their force only to the silver preparations; in some modifications of the processes, with the bichromate of potash, the common bibulous paper, used for filtering liquids, has been found to answer remarkably well, on account of the facility with which it absorbs any size or varnish.

"Great annoyance often arises from the rapid discolouration of the more sensitive kinds of photographic drawing paper, independent of the action of light, which appears to arise from the action of the nitrate of silver on the organic matters of the size. Unsized paper is less liable to this change. If we spread a pure chloride of silver over the paper, it may be kept for any length of time without any change of its whiteness taking place in the dark. Wash it over with a very weak solution of nitrate of silver, and particularly if the paper is much sized, a very rapid change of colour will take place, however carefully we may screen it from the light. From this it is evident that the organic matter of the size is the principal cause of the spontaneous darkening of photographic papers prepared with the salts of silver.

"The most curious part of the whole matter is, that in many cases this change is carried on to such an extent that a revival of metallic silver takes place, to all appearance in opposition to the force of affinity. This is very difficult to deal with. Chemistry has not yet made us acquainted with any organic body which would separate either chlorine or nitric acid from their metallic combinations. I can only view it in this light:—the nitric acid liberates a quantity of carbonaceous matter, which, acting by a function peculiarly its own, will at certain temperatures effect a revival of gold and silver, as proved by Dr. Schafheutl's and Count Rumford's experiments.

"Having been informed that the papermakers are in the habit of bleaching their papers with sulphur and the sulphites, I have submitted a considerable quantity of the browned papers to careful examination. In all cases where the paper has blackened I have detected the presence of sulphur. Consequently, when the darkening goes on rapidly, and terminates in blackness, we may, I think, correctly attribute it to the formation of a sulphuret of silver.

"China clay—kaolin—has of late years been much used by the paper-manufacturers, for the double purpose of giving weight to the paper, and of enabling them to produce a smooth surface upon all the finer varieties of paper—such as the 'enamelled satin post.' This compound of alumina and silica would not, if the finest varieties of clay were employed, be likely to do much mischief in the papers used for photography; but the less pure varieties of the Cornish clay

* *Photography; a Treatise on the Chemical Changes produced by Solar Radiation, and the Production of Pictures from Nature, by the Daguerrotype, Calotype, and other Photographic Processes.* By Robert Hunt; Professor of Mechanical Science in the Museum of Practical Geology; Author of "Researches on Light," "The Poetry of Science," &c. London: Published by John Joseph Griffin and Co., 53, Baker-street, Portman-square; and Richard Griffin and Co., Glasgow, 1851.



are employed, and this commonly contains iron and other metals in a state of very fine division; and these, where they come to the surface, form little centres of action, from which dark circles spread in rather a curious manner. In France there has been manufactured a paper for this especial process; it is very thin, and of a tolerably uniform texture. It is said to answer exceedingly well with the modified forms of photographic manipulation employed in France, but it does not appear adapted, from some cause which is not clearly explained, to the English processes. Thin papers have been tried, and many varieties would answer exceedingly well, but that nearly every variety is found penetrated with small holes, which, though of minute dimensions, suffer light to pass freely, and consequently produce a spottiness on the resulting picture. Sir John Herschel found that this evil could be remedied by fastening two pieces of such paper together; but this method is troublesome and uncertain.

"Returning to the consideration of size in the paper, the above-named authority—who employed the lead salts in some of his photographic processes—has the following remarks:—

"The paper with a basis of lead turns yellow by keeping in the dark, and the tint goes on gradually deepening to a dark brown. But what is very singular, this change is not equally rapid upon all kinds of paper,—a difference depending, no doubt, on the size employed; which, it may be observed here once for all, is of the utmost influence in all photographic processes. In one sort of paper (known by the name of blue wove post) it is instantaneous, taking place the moment the nitrate (if abundant) is applied. And yet I find this paper to resist discolouration, by keeping, better than any other, when the mordant base is silver instead of lead. On the other hand, a paper of that kind called smooth demy, rendered sensitive by a combination of lead and silver, was found to acquire, by long keeping, a lead or slate colour, which increases to such a degree as might be supposed to render it useless. Yet, in this state, when it is impressed with a photographic image, the process of fixing with hyposulphite of soda destroys this colour completely, leaving the ground as white as when first prepared. This fortunate restoration, however, does not take place when the paper has been browned as above described. Some of the muriatic salts also are more apt to induce this discolouration than others, especially those with the earthy bases."

"It will be evident from these remarks that it is of the utmost importance to secure a paper which shall be as chemically pure as possible. Experience has proved that recently-manufactured paper does not answer equally well with that which has been made for a year or two. It has been thought by many that this was an unfounded statement, but it is not so; and the causes operating to the improvement of paper by age are evident. The organic matter of the size is liable to a spontaneous change: this goes on for a considerable time, but at length the process becomes so exceedingly slow that it may, for all practical purposes, be said virtually to rest. Paper changes its colour by keeping from this cause, and I have found that such as I have selected from the shop-worn stocks of stationers has been generally superior to that which has been more recently manufactured."

"Where the process is highly sensitive for which the paper is desired, it is important to treat it in the following manner:—Having a shallow dish sufficiently large to receive the sheets of paper without in any way crumpling them, it is to be filled with very clear filtered water, to which a sufficient quantity of nitric acid has been added to make it slightly sour to the taste. Taking a sheet of paper, it should be laid on a porcelain slab, and sponged with clean water on both sides, after which it should be placed in the acidulated water, and allowed to remain in it for several hours. Too many sheets should not be placed in the vessel at the same time. After a time they should be removed in mass, placed on the slab, and left for half an hour under gently flowing water,—this removes all the acid, and all those metallic and earthy matters which it has removed from the paper. After this it is to be dried, and it is then fit for photographic use."

PUBLIC SALES OF DRUGS.

August 21.—By LEWIS and PRAT.—54 cases Castor Oil, good pale, 4½d. straw, 2½d. to 3d.; 20 bags Cardamoms, out; 10 cases Cape Aloes, 25s. to 32s. 6d.; 25 bags Cubebs, £5; 89 packages Beeswax, £6. 7s. 6d. to £8. 12s. 6d. sold; 1 cask Honey, 45s.; 6 casks Fenugreek Seed, 13s. sold; 3 barrels Balsam Capivi, 1s. 1½d.; 6 kegs Canada Balsam, 10d.; 2 casks Cod Liver Oil, 8s. 6d., sold; 10 cases Rape Seed Oil, 31s.; 7 casks Asphaltum, 32s., bought in; 24 bags Colombo Root, 15s.; 16 bags Nux Vomica, 9s. 6d.; 22 cases Sticklac, 15s., out, dust, 2s. 6d.; 87 bags Turmeric, 14s. to 14s. 6d.; 28 boxes Shellac, red orange, 48s. 6d. to 49s.; 44 bales Sarsaparilla, 7d. to 8d. and 4½d. sold; 23 bags Cape Aloe, 45s. to 46s. 6d. and 44s.; 20 kegs Tamarinds, 32s. 36s., bought in; 7 packages Isinglass, 2s. to 3s., sold; 1 box Vanillaes, out; 2 chests Turkey Opium, 9s.; 5 bales Sponge, out; 3 bales Songe, out.

By C. L. JENKIN.—40 serons Yellow Bark, 7d., out; 8 chests Gray ditto, 10d. to 1s. 4d.; 4 chests Cream Tartar, 60s., sold; 16 cases Gentian, 18s., out; 20, kegs Canada Balsam, 9½d., out; 36 tins Hyracum, 6s., out; 1 cts Ergot Rye, 1s. 10d., sold; 4 tins Oil Neroli, 5s., out; 2 cases Manna, 1s. 6d., out; 20 cases Rhubarb, flat, 2s. 4d. and 2s., out; 47 cases Senna, 1½d to 1½d., out; 6 packages Bees' Wax, £6. 17s. 6d. to £7; 9 casks Cocoa-nut Oil, 30s. to 35s.; 6 chests Lard Stearine, 80s.; 9 cases Cod Liver Oil, 4s.

By PRIOR, GIFFORD, and Co.—40 serons damaged Yellow Bark, 6d. to 4s. 3d. sold; 71 do. Crown Bark, 1s. 2d. to 4s. 3d., part sold; 66 bales Sarsaparilla, 5d. to 5½d.; 6 bags Cummin Seeds, 35s.; 20 bags Turkey Blue Galls, 95s., bought in; 8 bales, do. (sorta) do., 75s.; 1 case Silk Worm Gut, all at £30; 6 tins Vanilla, 24s., out; 18 boxes Fine Rhubarb, 2s. 4d. to 2s. 5d.; 22 tins Balsam Tolu, 2s. 10d.; 19 barrels Balsam Capivi, 1s. 1d., out; 10 casks Roman Blue Vitriol, 27s.; 109 casks Spanish Black Lead Dust, 6s.; 19 cases Spanish Black Lead, lump, 14s. 6d.; 80 baskets Cutch, fair Pegue, 18s. 6d., sold; 6 barrels Cassia Fistula, 21s.; 2 casks Colombo Root, 25s.

By T. MERRY and Sons.—146 boxes Siam Sticklac, 53s. to 55s., out; 115 bags Cummin Seed, 45s. to 48s.; 42 casks Brazil Isinglass, 11d. to 4s.; 14 cases Gum Arabic, 2 cases ditto, blocky, 6s. 6d. to 9s.; 10 cases Picked Gum Arabic, £6. 10s., out; 6 casks Cream Tartar, 66s. to 66s. 6d., out; 22 cases Benjamin, 80s. to 93s., out; 2 ditto fine Siam Benjamin, £80 to £85, out; 40 bottles Croton Oil, 4d.; 2 cases Turkey Opium, 14s.; 50 ditto E. I. Tamarinds, fair dark, 12s. to 12s. 6d.; 6 cases Shellac, dark liver, 42s., sold; 88 packages Cascarella Bark, 14s. to 26s.; 23 bags Gum Copal, 38s. to 72s., sold; 9 bales Worm Seeds, 1½d., sold; 28 ditto Fennugreek Seeds, 12s. 6d., sold; 28 serons Pitaya Bark, 1d. sold.

By D. GRAY.—19 bales Tinnevely Senna, 8d. to 9½d., sold; 102 cases Gum Olibanum, 6s. to 28s. 6d., sold; 25 cases Gum Benjamin, spurious, 20s. to 85s., out; 30 bales E. I. Senna, 3d. to 1½d.; 17 cases Cape Aloes, 21s. to 38s.; 32 pkgs. Socotrine and Hepatic Aloes, 30s. to 91s.; 13 cases Assafoetida, 62s. to 75s.; 1 Gamboge, £8 10s.; 7 pkgs. Canella Alba, 36s. to 39s.; 2 casks Cream Tartar, 63s.; 3 cases Oil Peppermint, 10s., out; 2 cases Sulphate Quinine, 10s. 9d. to 11s.

By S. RUCKER and Sons.—6 chests Gamboge, £9 2s. 6d. to £11 12s. 6d.; 7 chests Gum Benjamin, £6 2s. 6d. to £17 10s.; 85 chests Gum Kino, 53s. to 58s., sold; 80 chests Gum Arabic, 21s. to 31s.; 4 chests Dragon's Blood, £9 to £9 10s.; 5 chests Cardamoms, 8s., out; 64 chests Camphor, 66s. to 67s. 6d.; 56 casks Camphor, 70s., sold; 4 cases Star Aniseed, 78s., out; 1 case Sal Ammoniac, 20s.; 70 cases Castor Oil, 2½d. to 4½d.; 6 boxes E. I. Isinglass, 2s. 8d.; 69 boxes Sticklac, 51s., sold; 2 boxes Shellac, 41s. 6d., sold; 8 bales Sarsaparilla, 1s. 6d., sold; 4 cases Saffron, out; 4 casks Barbadoes Tamarinds, out.

By MAITLAND, FAWKES, and Co.—69 cases Castor Oil, out; 5 cases Cinnamon Oil, 2s., out.

PRICE CURRENT OF DRUGS, &c.

Articles having bd. or bond annexed are sold at short price exclusive of duty; when no duty is affixed the article is free. Add 5 per cent. to the duty on all articles excepting those having an asterisk prefixed. F. means foreign; B.P. British possessions.

DRUGS, &c.		Price.	
		£. s. d.	£. s. d.
ALCANET ROOT cwt.		1 14 6	2 10 0
ALOES, Barbadoes		1 10 0	6 0 0
Hepatica		1 10 0	5 0 0
Cape		1 5 0	1 15 0
ALUM, British ton		7 10 0	8 5 0
Rooh		1 0 0	1 4 0
AMBERGRIS, Grey oz.		4 8	7 0
ANGUOVIES dble. brl.		17 0	18 0
ANGELICA ROOT cwt.		1 0 0	1 5 0
ANNATTO, Flag lb.		1 0	1 2
Roll		0 10	1 0
ANTIMONY, Crude cwt.		1 8 0	0 0 0
Ora ton.		12 0	0 0 0
Regulus Ops. cwt.		2 4 0	3 0 0
Bowls		2 15 0	2 12 0
ARROW ROOT lb.		0 3	1 0
ASENIC, White cwt.		17 0	18 0
Red		0 0	0 0
English White		12 6	1 0
Yellow		19 0	1 0 0
ARGOL, Bologna cwt.		2 0 0	2 12 0
Florence White		2 0 0	2 8 0
Red		2 0 0	2 5 0
Naples White		1 18 0	2 5 0
Red		1 12 0	1 13 0
Sicily White		1 8 0	1 16 0
Red		1 8 0	1 10 0
French		1 14 0	2 7 0
Cape		1 15 0	2 11 0
ASPHALTUM, Egyptian ..		2 10 0	4 15 0
BORACIC ACID cwt.		2 12 0	2 13 0
BALSAM, Canada lb.		0 24	1 0
Capavi		0 10	1 2
Peru		5 6	6 0
Tolu		3 6	4 0
BARILLA, Spanish ton		0 0	0 0
Teneriffe		0 0	0 0
Sicily		0 0	0 0
East India		0 0	0 0
BARK, Peruvian, pale .. lb.		1 6	2 6
Good		0 0	2 0
Mid., do.		1 1	1 2
Crown		1 3	2 2
Yellow, Flat		3 0	4 6
Quill		2 0	6 5
Red, Flat		7 0	0 0
Quill		3 0	4 6
Cascarilla cwt.		1 0 0	1 15 0
Quercitron		8 6	9 6
Oak, English....per load		13 0 0	14 0 0
Foreign....per ton.		3 0 0	6 5 0
New S. W.		5 0 0	8 0 0
BERRIES, Bay cwt.		19 6	1 6 0
Juniper, Italian.. ..		7 6	8 0
German.. ..		8 0	12 0
Turkey, Yellow.. ..		3 15 0	6 0 0
Perseian, do.		8 0 0	14 0 0
BLACK LEAD, E. I. .. cwt.		5 0	16 0
Malaga		10 0	1 5 0
German		1 0 0	1 3 0
Dust		9 0	12 0
BORAX OR TINCAL .. cwt.		2 0 0	0 0
E. I. Refined		2 17 0	2 18 0
English Refined		3 10 0	3 12 0
BRIMSTONE, Rough.. .. ton		7 19 0	8 0 0
Roll		12 0 0	0 0
CAMPHOR, Unrefined .. cwt.		3 7 6	3 10 0
Dutch.. ..		2 10 0	0 0
* Refined lb.		1 0	1 1
CANTHARIDES, bd. ..		3 0	3 6
CAPERS, French cwt.		7 0 0	12 0 0
Capotts		6 0 0	7 10 0
CARDAMOMS, Malabar .. lb.		2 9	3 0
Long Longs.. ..		3 0	3 4
Ceylon		1 3	1 5 1/2
CASTOR OIL, America .. lb.		0 0	0 0
E. I., bd.		0 2 1/2	0 4 1/2
CHILIES, E. I. cwt.		15 6	1 5 0
CHINA ROOT cwt.		10 0	1 0 6
COCHINEAL, Honduras Black .. lb.		3 7	4 10
Silver		3 0	3 11
Mexican Black		3 4	3 9
Silver		3 0	3 3
COBALT lb.		0 0	0 0
COCCULUS INDICUS .. cwt.		1 0 0	1 7 0

DRUGS, &c., continued.

Price.		£. s. d.	£. s. d.
COFFEE, Jamaica, triage and ord.		1 12 0	1 18 0
good and fine ord.		2 0 0	2 6 0
low to good middling		2 8 0	2 10 0
fine middling & fine		3 12 0	4 10 0
Demerara, triage & ord.		0 0	0 0
good and fine ord.		0 0	0 0
low to good mid.		0 0	0 0
Bербice, triage and ord.		0 0	0 0
good and fine ord.		0 0	0 0
low to fine middling		0 0	0 0
Dominica and St. Lucia,		0 0	0 0
triage and ordinary		0 0	0 0
good and fine ord.		0 0	0 0
low to good middling		0 0	0 0
Ceylon, ordinary to very		1 19 6	2 0 6
good ord. native		2 4 0	2 14 0
fine ord. to mid. plu.		2 16 0	2 15 0
good mid. to fine do.		2 0 0	2 10 0
Mocha, ord. & ungarbled		3 4 0	3 15 0
clean garbled		3 16 0	4 8 0
fine		1 17 0	2 0 0
Sumatra, Padang, &c..		2 4 0	3 0 0
Java		1 19 0	2 10 0
Mysore with certificate		1 15 0	1 18 0
Brazil, ord. to fine ord.		2 0 0	2 15 0
ex. fine plant. kind		1 17 0	1 19 0
St. Domingo		1 18 0	2 0 0
Havannah, ord. to g. ord.		2 2 0	2 10 0
fine ordin. to mid.		1 18 0	2 2 0
Cuba, ord. to good ord.		2 4 0	2 15 0
fine ord. to middling		1 18 0	2 10 0
Porto Rico		1 18 0	2 12 0
La Guayra		2 0 0	2 12 0
Costa Rica		2 3 0	3 14 0
Cocoa, Trinidad, red ..		1 18 0	2 9 0
grey		1 15 0	2 3 0
Grenada		1 7 0	1 9 0
Para, St. Domingo, and Bahia		1 9 6	1 10 0
Guayaquil		0 6	1 2
COLOCYNTH, Turkey .. lb.		0 11	1 6
Spanish		2 16 0	2 19 0
COLOMBO ROOT		10 0	2 15 0
COPPERAS, Green, bc. .. ton		8 0	1 10 0
Blue		2 18 0	3 8 0
CREAM TARTAR, French ..		2 5 0	3 8 0
Venetian		4 0 0	5 0 0
CUBERS cwt.		1 0 0	1 0 6
CUTCH		3 10 0	9 15 0
DRAGON'S BLOOD .. lump		8 0 0	14 10 0
Reed		45 0 0	80 0 0
DYEWOODS:		0 0	0 0
Brazil ton		13 15 0	28 15 0
Barwood, Angola		0 0	0 0
Camwood		0 0	0 0
Fustic, Brazil		8 10 0	9 0 0
Cuba		5 0 0	5 10 0
Jamaica		4 0 0	4 10 0
Spanish		0 0	0 0
Zante		6 10 0	6 15 0
Logwood, Campeachy ..		5 0 0	5 10 0
Honduras		3 10 0	4 0 0
Jamaica		4 0 0	5 0 0
St. Domingo		14 0 0	15 0 0
Nicaragua, Lima		12 0 0	17 0 0
solid		6 10 0	13 0 0
small and mid.		4 10 0	5 15 0
Red Sanders ton		2 8	5 4
* ESSENTIAL OILS		6 3	5 4
Cloves, bd. lb.		3 6	7 0
Caraway		4 0	11 0
Lavender		4 0	0 0
Peppermint, bd.		5 5	5 6
Spike		9 6	10 0
Aniseed, bd. lb.		0 2 1/2	0 4 1/2
Cassia, bd.		0 10	2 6
Cayaput, bd. oz.		0 3	0 5 1/2
Cinnamon, bd.		0 4	0 5 1/2
Mace (expd.), bd. ..		9 0	9 9
Nutmegs, bd. lb.		8 6	8 9
Bergamot		6 9	7 0
Lemon		1 8	2 6
Orange		2 9	3 0
Rosemary		13 6	1 0 0
Thyme		1 5 0	0 0
Otto Roses oz.		14 0	1 4 0
Almonds lb.		4 0	4 10 0
GALANGAL ROOT, bd. .. cwt.		2 15 0	3 10 0
GALLS, sorts cwt.		4 12 0	5 0 0
Green or White		3 10 0	5 0 0
Blue		1 1 0	1 2 0
E. I. Blue bd.		1 5 0	1 0 0
GENTIAN ROOT cwt.		0 0	0 0
GLUE, Best Town		1 10 0	2 5 0
Interior		2 5 0	0 0
Foreign			
GUINNEA GRAINS, bd. ..			

B.P. 4d, F. 6d. per lb.

nominal.

B.P. 1d, F. 2d. per lb.

s. per lb.

1s. per lb.

15s. per cwt.

DRUGS, &c., continued.		Price.		Price.	
		£. s. d.	£. s. d.		£. s. d.
GUTTA PERCHA lb.		0 10 @	1 0	IRON, British Bars	5 2 6 @ 5 10 0
GUMS:				Rods	6 5 0 @ 6 15 0
Ammoniac, Lp. .. . cwt.		9 6 @	1 10 0	Hoops	7 0 0 @ 7 10 0
Arabic, E. I.		1 15 0 @	3 15 0	Sheet	7 15 0 @ 8 5 0
Cape		13 0 @	1 2 0	Cargo in Wales Bars	4 10 0 @ 4 0 0
Turkey, fine		8 10 0 @	10 0 0	Pigs No. 1 Wales	3 0 0 @ 3 0 0
2nds and 3rds		3 5 0 @	6 0 0	No. 1 Clyde	1 19 0 @ 2 0 0
Australian		1 17 0 @	3 0 0	RussianC.O.N.D.	0 0 @ 0 0
Barbary, Brown		1 15 0 @	3 10 0	P.S.I.	0 0 @ 0 0
White		3 5 0 @	3 15 0	Archangel	0 0 @ 0 0
Gedda		5 0 0 @	6 0 0	Swedish	11 10 0 @ 12 10 0
ANIMI, washed		3 0 0 @	11 10 0	LEAD, British:	
scraped		6 0 0 @	12 0 0	Pigs ton	16 15 0 @ 0 0
Copal lb.		0 6 @	3 8	Sheet milled	15 0 0 @ 18 5 0
ASAFOTIDA cwt.		10 0 @	4 10 0	Shot Pat.	19 10 0 @ 20 10 0
BENJAMIN, 3rds		4 0 0 @	9 10 0	Red or Minium	18 10 0 @ 19 0 0
1st and 2nds		10 0 0 @	35 0 0	White	22 0 0 @ 25 0 0
DAMMAR		1 10 0 @	1 18 0	Litharge	19 0 0 @ 0 0
GAMBAGE		5 0 0 @	11 10 0	Pig Spanish	0 0 @ 0 0
GALBANUM		3 10 0 @	3 0 0	American	0 0 @ 0 0
GUAJACUM lb.		0 6 @	1 0	STEEL, English	0 0 @ 0 0
MYRRH, E. I. .. . cwt.		3 0 0 @	10 0 0	Swedish Keg	14 10 0 @ 0 0
MASTIC lb.		3 0 0 @	6 6	Faggot	15 10 0 @ 0 0
OLIVANUM .. . cwt.		10 0 @	3 14 6	TIN, Blocks	4 4 0 @ 0 0
SANDRACH		2 6 0 @	3 10 0	Ingots	4 10 0 @ 0 0
SENNEGAL, garbled		3 0 0 @	4 10 0	In Bars	4 5 0 @ 0 0
TRAGACANTH, Picked		13 0 0 @	16 0 0	Banco .. bd.	4 1 0 @ 0 0
Sorts		4 6 0 @	10 0 0	Strait .. bd.	4 1 0 @ 0 0
LAC, Sticklac, Bengal		17 0 @	1 15 0	Persian .. bd.	0 0 @ 0 0
Siam, &c.		2 10 0 @	3 8 0	Plates, p. bx. of 245 Sheets:	
Shellac, Liver .. . cwt.		2 2 0 @	3 5 0	No. 1 C 13 1/2 by 10 in. ..	1 5 0 @ 1 5 6
Ruby		2 5 0 @	3 10 0	1 X	1 13 0 @ 1 13 6
Orange		2 5 0 @	3 18 0	1 XX	0 0 @ 0 0
Black		1 1 0 @	3 5 0	SPLINTER on the spot ton	14 10 0 @ 0 0
Blood		2 0 0 @	3 8 0	Delivery	14 10 0 @ 0 0
Seedlac cwt.		1 0 0 @	3 0 0	ZINC, English Sheet	21 0 0 @ 0 0
HELLBORN ROOT .. . cwt.		1 18 0 @	0 0 0	PLATINA ONE	0 0 @ 0 0
HONEY, Fine		1 8 0 @	3 0 0	ORANDEW lb.	0 0 @ 0 0
ISLAND MOSS lb.		0 2 1/2 @	0 2	MUSK, good and fine .. . os.	10 0 @ 1 5 0
INDIA RUBBER, solid		0 8 @	0 9	NUX VOMICA, bd. .. . cwt.	7 6 @ 9 6
bottles		1 0 @	1 8		
small		1 9 @	3 6	OILS—Imperial measure:	
INDIGO lb.		4 2 @	4 7	Olive, Florence, & chest ..	15 0 @ 18 0
Bengal, fine blue		6 0 @	6 4	Locos, jars	5 0 0 @ 0 0
good and fine violet and purple		5 6 @	5 9	Gallipoli, 225 gals. ..	28 0 0 @ 40 0 0
ordinary and middling ..		4 7 @	5 0	Spanish, ditto	39 0 0 @ 39 0 0
good and fine copper ..		5 4 @	5 8	Linsed .. cwt. ..	1 12 9 @ 1 13 0
ordinary and middling ..		3 9 @	5 0	Rape, Pale	1 14 0 @ 0 0
Consumers, good and fine		4 8 @	5 2	Brown	1 12 0 @ 0 0
ordinary and middling ..		3 9 @	4 6	Cod tun. ..	37 0 0 @ 0 0
Java, good and fine ..		4 3 @	4 8	Seal, Pale	35 10 0 @ 0 0
Oude, good and fine ..		3 3 @	4 6	Brown, yel., and straw	34 0 0 @ 34 10 0
ordinary and middling ..		2 2 @	3 2	Sperm	84 0 0 @ 85 0 0
Madras, good and fine ..		3 1 @	4 3	Head Matter	90 0 0 @ 0 0
ordinary and middling ..		1 9 @	3 0	Whale, Greenland	0 0 @ 0 0
Kupah, good and fine ..		3 6 @	5 6	South Sea	39 0 0 @ 33 0 0
ordinary and middling ..		2 0 @	3 5	Cocoa Nut .. . cwt. ..	1 10 0 @ 1 14 6
Manilla good and fine ..		Withdrawn.		Palm cwt. ..	37 10 0 @ 38 0 0
ordinary and middling ..				OLIVES, French & baris .. gals	3 0 0 @ 4 0 0
IPERACUANHA lb.		5 0 @	5 6	Spanish, keg 3 galls. ..	9 0 @ 10 0
ISINGLASS LEAF, 1st sort ..		10 0 @	13 6	OPIMUM, Turkey, bd .. lb.	10 6 @ 14 0
2nd sort		9 0 @	10 0	Egyptian	7 6 @ 8 6
Simovia		3 0 @	3 9	ORCHILLA, Angola .. ton	35 0 0 @ 0 0
Siberia Furze		5 0 @	6 0	Cape de Ver. ..	25 0 0 @ 35 0 0
Short Staple, 1st		8 0 @	14 0	Madeira	30 0 0 @ 0 0
Long ditto		10 0 @	14 0	ORPIMENT, F. India .. lb.	0 0 @ 0 0
ISINGLASS, Brazil		0 6 @	5 6	ORANGE FLOWER water .. lb.	0 8 @ 0 0
JALAP lb.		1 4 @	2 2	Peel	5 0 @ 0 0
JUICE OF LEMON gal.		0 10 @	1 0	ORRIS ROOT cwt.	1 18 0 @ 2 2 0
LAC DYE, Fine lb.		1 8 @	2 4	PALLITORY ROOT lb.	0 6 @ 0 0
Good		1 2 @	1 5	PINK ROOT lb.	0 5 @ 0 8
Middling		1 0 @	1 2	PITCH, British .. . cwt.	5 6 @ 0 0
Ordinary		0 5 @	0 11	Archangel	7 6 @ 0 0
Lake		0 3 @	0 8	Stockholm	12 0 @ 0 0
QUORIC Paste, Ital. .. cwt.		3 5 0 @	3 12 6	Burgundy cwt.	0 0 @ 0 0
Block		4 0 9 @	5 15 0	PUMICESTONE, sorts .. ton	5 0 0 @ 8 0 0
ADDERS, Dutch Crop .. cwt.		2 6 0 @	3 10 0	QUASSIA cwt.	8 0 @ 12 0
Ombro		2 2 0 @	3 5 0	QUICKSILVER lb.	3 4 @ 3 6
Gamene		1 5 0 @	1 10 0	RHATANIA ROOT lb.	0 5 @ 0 8
Mull		8 0 @	12 6	RHUBARB, round	0 6 @ 3 3
French		0 0 @	0 0	Flat	0 8 @ 3 3
Spanish		1 10 0 @	2 0 0	Dutch, trimd. ..	2 6 @ 3 9
MADDER ROOTS, Turkey ..		1 6 0 @	1 10 0	Russian	10 0 @ 12 0
MAGNESIA, English		3 0 0 @	2 2 0	SACCHARUM SATURNI, bd. .. lb.	1 0 0 @ 1 6 0
MANNA, Flakey lb.		3 0 @	3 6	SAPPHON, Spanish lb.	18 0 @ 18 6
Stilly		1 0 @	1 6	*SAGO common .. . cwt.	19 0 @ 1 4 0
MUNJEET, E. I. .. . cwt.		18 0 @	1 2 0	Pearl	14 0 @ 15 0
METALS:				Sago Flour	1 10 0 @ 1 13 0
Brt. Casts ton		84 0 0 @	0 0	SAL AMMONIAC, E. I. .. cwt.	1 18 0 @ 6 6
Tile		83 0 0 @	0 0	English, Refined ..	6 6 @ 7 0
Sheets lb.		0 0 @	0 0	SALTS, Glauber	6 0 @ 6 0
Bottoms		0 10 @	0 0	Epsom	18 15 0 @ 14 5 0
Old		0 2 @	0 0	SALEP lb.	0 10 @ 1 8
S. American ton		0 0 @	0 0	SARSAPARILLA, Brasil	6 10 @ 1 6
Foreign Cake		0 0 @	0 0	Honduras	6 10 @ 1 6
Foreign Tile		0 0 @	0 0		

B.P. 5 F. 10s.

Public Sale Prices.

F 1 0 0 cwt.
B P 10 0 cwt.

per cwt. un-
wrought 4s.
B.P. 8s. 9d. F.
wrought B.P.
5s. F. 10s. old
B.P. 8s. 6d.
old F. 7s. 6d.

10 per cwt.
5 0 p. cwt.

2 0 2 0 gall.
0 1 0 p. lb.

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DRUGS, &c., continued.		Price.	
		£. s. d.	£. s. d.
SARSAPARILLA, Vera Cruz	..	0 4 0	0 5 0
Jamaica ..	..	1 6 0	2 3 0
SASSAPARILLA ROOT ..	.. ton	10 0 0	12 0 0
SAFFLOWER, E. L. ..	.. cwt.	5 0 0	8 0 0
Bombay ..	..	1 5 0	2 0 0
SHUMAC, Malaga ..	.. cwt.	12 0 0	13 6 0
Sicily ..	..	14 6 0	15 0 0
Trieste ..	..	4 6 0	6 6 0
SALTPETRE, Rough ..	..	1 6 0	1 9 6
British, Refined	..	1 9 0	1 9 6
Nitrate of Soda	..	13 6 0	14 0 0
British, Refined	..	0 0 0	0 0 0
SCAMMONT, Smyrna ..	.. lb.	5 0 0	7 0 0
Aleppo, Sade	..	10 0 0	15 0 0
fine	..	1 8 0	1 15 0
SEEDS, Aniseed ..	.. cwt.	2 2 0	2 5 6
German ..	..	2 2 0	2 5 6
E. I. Star ..	..	2 5 0	3 10 0
Cumin ..	..	2 15 0	3 10 0
Caraway, Foreign	..	19 0 0	1 10 0
SENNA ROOT ..	.. lb.	0 6 0	1 0 0
SENNA, Alexandria ..	.. lb.	0 2 0	0 6 0
Smyrna ..	..	0 0 0	0 0 0
East India ..	..	0 1 2	0 5 0
Tinnevely ..	..	0 8 0	1 4 0
SMELTS, Saxon, FFFE ..	.. lb.	1 2 0	0 0 0
FFFE ..	..	1 7 0	0 0 0
Danish, FFFE ..	..	1 3 0	0 0 0
FFFE ..	..	1 8 0	0 0 0
SNAKE ROOT ..	.. lb.	0 4 0	0 8 0
SOAP, Naples, soft ..	..	1 8 0	1 9 0
Casile, hard ..	.. cwt.	2 0 0	0 0 0
British, Mottled ..	..	2 2 0	2 4 0
Yellow ..	..	1 18 0	2 2 0
White ..	..	2 14 0	0 0 0
Scented ..	..	0 0 0	0 0 0
Windsor ..	..	0 0 0	0 0 0
Oil ..	..	0 0 0	0 0 0
Soft B. B. ..	..	1 3 0	0 0 0
B. S. ..	..	0 0 0	0 0 0
B. ..	..	0 0 0	0 0 0
SODA ..	.. ton.	6 10 0	0 0 0
ASHES, Canada ..	.. Pot. 1st. cwt.	1 10 0	1 11 0
Pearl 1st	..	1 9 0	0 0 0
United States Pot	..	0 0 0	0 0 0
Pearl	..	0 0 0	0 0 0
SOY, bd. ..	.. gallon	4 0 0	4 4 0
SPICES—			
Cassia Lignea, ord. to mid.	..	5 5 0	5 8 0
good to fine	..	5 10 0	5 12 0
Cassia Buds ..	..	5 12 0	5 15 0
Cinnamon, Ceylon, 1st quality	..	1 6 0	3 4 0
2d ..	..	1 0 0	2 4 0
3d ..	..	0 8 0	1 10 0
Malabar ..	..	0 8 0	0 0 0
Tellicherry ..	..	0 8 0	1 10 0
Cloves, Amboyna ..	..	0 8 0	0 10 0
Bourbon & Zanzibar	..	0 5 0	0 6 0
Penang ..	..	0 10 0	1 2 0
Ginger, Bengal ..	..	13 0 0	2 10 0
Malabar ..	..	17 0 0	2 15 0
Jamaica ..	..	2 6 0	10 0 0
Barbadoes ..	..	0 0 0	0 0 0
Mace ..	..	1 10 0	2 7 0
Nutmegs, brown ..	..	2 0 0	3 9 0
lined ..	..	1 4 0	3 0 0
Pepper, bd. Malabar, heavy shot	..	0 3 0	0 3 0
light and half heavy	..	0 3 0	0 3 0
Eastern ..	..	0 2 0	0 3 0
white ..	..	0 2 0	0 10 0
long ..	..	0 0 0	0 0 0
Pimento ..	..	0 5 0	0 6 0
SPONGE, fine ..	.. lb.	9 0 0	1 5 0
ordinary ..	..	1 0 0	7 6 0
SPIRITS OF TURPENTINE ..	.. cwt.	1 14 0	1 15 6
SULPHATE OF QUININE ..	.. oz.	11 9 0	12 0 0
SQUILLS, dry ..	.. lb.	0 1 0	0 2 0
undried ..	..	0 0 0	0 0 0
SPERMACEIN, English ..	.. lb.	1 4 0	1 5 0
American ..	..	0 0 0	0 0 0
STARCH, English ..	..	2 6 0	2 12 0
Irish ..	..	0 0 0	0 0 0
POTATO FARINA ..	..	14 6 0	15 6 0
TALLOW:			
Petersburg, new ..	.. cwt.	0 0 0	1 18 6
old ..	..	1 17 9	1 18 0
Delivery last three months	..	1 19 6	0 0 0
South American ..	..	1 17 0	1 17 6
Odessa Sheep ..	..	0 0 0	0 0 0
North American ..	..	0 0 0	0 0 0
Australian ..	..	1 15 0	1 17 0
Town Tallow ..	.. cwt.	1 19 6	0 0 0
Fat by ditto ..	..	2 1 0	0 0 0
Russian Candle ..	..	1 19 6	0 0 0
Melted Stuff ..	..	1 8 0	0 0 0
Rough ditto ..	..	18 0 0	0 0 0

DRUGS, &c., continued.		Price.	
		£. s. d.	£. s. d.
TALLOW:			
Graves ..	..	9 0 0	0 0 0
Good Drugs ..	..	6 0 0	0 0 0
PRICES OF CANDLES, per doz.:			
Mould Candles ..	..	6 0 0	7 0 0
Store ditto ..	..	4 6 0	5 6 0
TAMARINDS, West Ind. ..	.. cwt.	1 10 0	2 10 0
East Ind., bd. ..	..	12 0 0	16 0 0
*TAPIOCA ..	.. lb.	0 14 0	0 4 0
TEA: bd.			
Bohea, Canton, & Woping	..	0 6 0	0 7 0
Fokien ..	..	0 0 0	0 0 0
Congou, ordinary and out	..	0 9 0	0 9 0
of condition ..	..	0 10 0	0 10 0
good ordinary ..	..	0 10 0	0 10 0
mixed blackish leaf ..	..	0 11 0	0 11 0
rather blackish leaf ..	..	0 11 0	0 11 0
blackish leaf ..	..	0 11 0	1 0 0
ditto rather strong to	..	1 0 0	1 1 0
strong ..	..	1 1 0	1 5 0
Pekoe kind and flavour	..	0 11 0	1 6 0
Ning Yung, fair to fine	..	0 9 0	1 0 0
Pouchong ..	..	0 0 0	0 0 0
Caper, chests ..	..	0 0 0	0 0 0
do. in 10 lb. Oak boxes	..	0 11 0	1 6 0
Campol, common ..	..	0 0 0	0 0 0
good to fine ..	..	0 0 0	0 0 0
Souchong, ordinary to good	..	0 0 0	1 2 0
fine ..	..	1 4 0	2 0 0
Flowery Pekoe, flat ..	..	1 0 0	1 3 0
fair to fine ..	..	1 6 0	2 3 0
very fine and flowery ..	..	2 4 0	3 0 0
Black leaf Pekoe or Hong	..		
Muey ..	..	0 10 0	1 4 0
Orange Pekoe, faint & odd	..	0 11 0	0 11 0
common to fine plain ..	..	1 0 0	1 1 0
common to fine scented	..	1 1 0	1 9 0
Twankay, common ..	..	0 10 0	0 11 0
good ..	..	1 0 0	1 1 0
fine to Hyson kind ..	..	1 2 0	1 3 0
Hyson Skin, common ..	..	0 10 0	0 11 0
good to fine ..	..	1 0 0	1 2 0
Hyson, common ..	..	1 1 0	1 3 0
fair to good ..	..	1 4 0	1 10 0
fine ..	..	2 0 0	2 6 0
extra fine ..	..	2 10 0	3 10 0
Young Hyson, common ..	..	0 8 0	1 1 0
good to fine ..	..	1 2 0	2 7 0
Imperial, common ..	..	1 2 0	1 4 0
good to fine ..	..	1 5 0	2 6 0
Gunpowder, common ..	..	0 8 0	1 7 0
good to fine ..	..	1 9 0	4 0 0
TURNERIO, Bengal ..	.. cwt.	16 0 0	17 0 0
Java ..	..	10 0 0	13 0 0
Madras ..	..	12 0 0	14 6 0
TERRA JAPONICA ..	.. cwt.	14 6 0	15 0 0
Sienna ..	..	1 2 0	1 4 0
VALONIA, Smyrna ..	.. ton	16 0 0	17 0 0
Picked Morea ..	..	13 0 0	14 0 0
VANILLAS, Brazil ..	.. lb.	10 0 0	2 12 6
Vera Cruz ..	..	1 5 0	1 10 0
VERDIGRIS, Foreign ..	..	0 9 0	0 10 0
English ..	..	1 3 0	0 0 0
VERMILION, China ..	.. lb.	4 0 0	4 2 0
English ..	..	5 0 0	0 0 0
VITRIOL, blue ..	..	1 8 0	1 10 0
Foreign, white ..	..	14 0 0	0 0 0
English, ditto ..	..	1 4 0	1 5 0
Oil of ..	..	0 1 0	0 9 0
WAX, Mogadore ..	.. cwt.	5 17 6	6 10 9
American ..	..	5 5 0	0 0 0
Russian ..	..	7 10 0	0 0 0
Hambro' ..	..	7 12 6	8 0 0
East India ..	..	5 10 0	9 0 0
African ..	..	5 0 0	7 0 0
White Hambro' ..	..	7 0 0	8 10 0
English ..	.. cwt.	2 0 0	9 15 0
Cape ..	..	6 15 0	6 15 0
West India ..	..	0 0 0	7 0 0
WELD ..	..	0 0 0	0 0 0
WOOD ..	.. ton	0 0 0	0 0 0
WOOD, Sapan Bimas	..	1 0 0	1 15 0
Siam ..	..	8 0 0	1 0 0

IMPERIAL WATER.—Boiling water, 8 lbs.; ginger, 1 oz.; cream tartar, 1 oz.; one lemon; loaf sugar, 1 lb.; barm and raspberry vinegar, of each, 2 tablespoonfuls.

After fermentation, bottle it, and tie the corks.
 Sp. MENTH. PIP. (Peppermint Cordial).—1. Ol. mentha pip., 3ij.; sp. vini. rect. cong., j.; aqua. cong., ij.; syr., q.s.
 2. Ol. mentha. p. ang., Mx.; sacch., 3ij.; sp. vini. R., 3iv; aq., 3xij.

Fine with magn., subc. pot. (sub), carb. and alum.
 THREE VINT.—Sp. tereb., 3 lbs.; resin, nig., 6 lbs.

DRUGS, &c., IMPORTED INTO LONDON IN THE
WEEK ENDING WEDNESDAY, AUGUST 20.

THURSDAY, Aug. 13.—In the Tudor, from Calcutta.

1695 bls. eutch, 1811 bgs. saltpetre, 100 cs. 191 bxs. castor oil, 662 chsts. indigo.

In the Earl of Auckland, from Rotterdam.

1 cs. cod liver oil.

In the Swartwich, from Gottenburg.

3421 bars iron.

In the Rosebud, from Antwerp.

46 tons oak bark.

In the Cavi, from Gottenburg.

2754 bars iron.

FRIDAY, August 15.—In the Sophia Moffatt, from Adelaide.

2775 bags copper ore, 7027 tiles, 1607 cakes 230 blocks copper, 5 bgs. regulus, 38 cks. tallow, 22 tons bark.

In the Urania, from Stettin.

5284 lbs. saltpetre.

In the Alice Maud, from Algoa Bay.

16 cs. aloes, 2 cs. beeswax.

In the Anna Maria, from Canton.

200 cs. 50 cks. ginger, 10 cks. salted do., 60 cks. soy.

In the Duke of Bedford, from Madras and Cape of Good Hope.

1204 chsts. indigo, 596 bgs. saltpetre, 26 cks. oil, 90 bgs. beeswax, 50 cs. castor oil, 193 bgs. turmeric, 36 bgs. sarsaparilla, 20 bgs. cardamoms, 7533 pcs. redwood, 99 bgs. nux vomica, 72 bgs. coffee, 79 cs. oil.

SATURDAY, Aug. 16.—In the Sydney, from Port Phillip.

506 cks. tallow, 901 bgs. copper ore.

In the Felicity, from Jamaica.

40 trcs. 89 brls. ginger, 21 tons logwood, 11 pkgs. succades.

In the Ranger, from Amsterdam.

200 slabs tin, 50 bgs. caraway seed.

In the William Simpson, from Batavia.

25 bxs. nutmegs, 839 bgs. pepper, a qnty. sapan wood.

In the Ormelie, from Calcutta.

504 bgs. saltpetre, 1600 bgs. 500 pkts. linseed.

In the Undaunted, from Sydney.

427 cks. black oil.

In the Prince of Wales, from Sydney.

29 cks. cocoanut oil, 193 cks. tallow, 54 cks. sperm oil.

In the Anna, from Stettin.

7621 lbs. saltpetre.

In the Delphinien, from Riga.

630 qrs. linseed.

In the State of Maine, from Manila.

593 chts. indigo, a qnty. sapan wood, 7 bls. isinglass, 1033 cakes copper ore.

In the Medway, from Colombo.

70 pps. 60 hds. cocoanut oil, 87 bls. cinnamon, 300 bgs. pepper, 2 cs. essential oil, 20 brls. plumbago.

In the Gloriana, from Madras, Pondicherry, and Cocanada.

2690 pcs. redwood, 12 ch. indigo, 6 bxs. spices, 15 cs. cardamoms, 6 chests beeswax.

From Pondicherry, 480 cks. oil, 14 chests indigo.

From Cocanada, 6 bxs. beeswax.

In the Lotus, from Barbadoes.

1 box succades, 36 kegs tamarinds.

In the Sydney Griffiths, from Launceston and Portfairry.

120 tons bark.

From Portfairry, 62 cks. tallow.

In the Ide, from Rio Janeiro.

350 brls. tapioca, 56 brls. drugs

MONDAY, Aug. 18.—In the George Lord, from Algoa Bay.

86 bgs. copper ore.

In the Lochnagar, from Port Phillip.

182 cks. tallow, 14 l. bark, 1 ck. trotter oil.

In the Jupiter, from Jamaica.

5 tcs. 24 brls. ginger, 27 tons logwood.

In the Wyvern, from Mogadore.

248 srns. almonds, 31 cks. gum.

In the Princess Alice, from Cadiz.

78 cs. liquorice.

In the Governor Van Ewyck, from

Antwerp,

58 cks. animal charcoal, 18 cks. rapeseed oil, 2 cs. mercury.

In the Oberon, from Ibrail and Galatz.

147 skins tallow.

from Galatz.

229 skins 32 paunches 24 cks. tallow.

In the Refuge, from Petersburg.

250 cks. tallow.

In the Queen of the Isles, from Buenos Ayres.

387 pps. 23 half pps. 7 cks. tallow.

In the Arena, from Jamaica.

20 tons logwood, 10 cwt. fustic, 7 kgs. tamarinds.

In the Zetas, from Bombay.

87 cs. gum olibanum, 7 cs. gum ammoniac, 9 cs. gum myrrh, 84 bags dry ginger, 1058 bags pepper, 194 cs. gum arabic, 14 cs. beeswax, 600 bags myrabolanes, 29 cs. gum animi, 109 bgs. turmeric, 49 bgs. nux vomica, 27 cs. cardamoms.

In the Belinda, from Cronstadt.

150 cks. tallow.

In the Soho, from Antwerp.

25 cks. spelter.

In the Katharine Stewart Forbes, from Sydney.

76 cks. tallow, 197 cks. oil, 2003 bgs. copper ore, 4 tons sapan wood, 57 tons bark.

In the Taglioni, from Port Adelaide.

A quantity copper ore, 37 cks. tallow.

In the Collingwood, from Cochin Calicut and Tellicherry.

335 cks. cocoanut oil, 8 pkgs. ginger, 18 bgs. ginger, 60 pkts. 44 bgs. coculus indicus, 1560 cs. ginger, 45 cs. gum, 18 bts. cocoanut oil.

TUESDAY, August 19.—In the Cobden, from Gefle.

3304 bars iron.

In the Leonide, from Leghorn.

900 hf. chsts. 200 hf. cs. 12 bxs. olive oil, 12 bxs. argols.

In the Sophia, from Jamaica.

203 brls. ginger, 22 tons logwood.

In the Reliance, from Port Beaufore.

110 cs. aloes, 6 bls. bucha leaves.

In the Majestic, from Calcutta.

369 bgs. linseed, 2 cs. cayenne pepper, 32 chts. lac dye, 205 chts. indigo.

In the Robert Newton, from Jamaica.

229 cks. ginger, 29 tons logwood, 15 bags pimento.

In the Asia, from Calcutta.

598 chts. lac dye, 200 chts. indigo, 192 cs. castor oil, 2132 bgs. 2100 pkts. linseed, 44 chts. shellac.

In the Cambodia, from Calcutta.

1650 bgs. saltpetre, 116 chts. lac dye, 306 chts. indigo, 100 chts. shellac, 700 bgs. 383 sks. 2000 pockets linseed.

In the Vallianeria, from the Cape of Good Hope.

7 cs. aloes, 89 cks. sea elephant oil, 2 brls. bark.

In the Acasta, from Colombo.

2 cs. citronella, 1 cse. lemon grass oil, 228 brls. 20 cks. plumbago, 14 pps. cocoanut oil, a quantity of sapan wood, 6 bgs. cardamoms.

In the Amulet, from Oporto.

60 cks. red argol.

In the Box, from Smyrna.

57 cs. sponge, 200 tons valonia.

In the Mary Helen, from Cronstadt.

100 cks. tallow, 1 cs. isinglass.

In the Earl Durham, from Point de Galle and Colombo.

8 cs. essential oil, 155 bls. cinnamon.

636 bars lead.	In the Circassian, from Cadix.
2615 brls. turpentine, 8 pkgs. beeswax, 18 bls. sponge.	In the Margaret Evans, from New York.
1979 bars iron.	In the Earl Bathurst, from Gottenburg.
760 bgs. linseed, 252 cs. castor oil, 5092 bgs. of rapeseed.	In the Monterey, from Calcutta.
8869 ps. fustic.	In the Protector, from Santa Martha.
WEDNESDAY, Aug. 20.	In the Ellen, from Singapore and Moulmein.
1382 slabs tin, 102 bls. cutch.	In the Familien, from Skelleftead.
2488 bars iron.	In the Ann Proud, from Gottenburg.
2936 bars iron.	In the Europa, from Swartwick.
2200 bars iron.	In the Oceanide, from Stettin.
961 pcs. 1854 pkts. spelter.	In the Seadrift, from Petersburg.
125 cks. tallow.	In the Princess Royal, from Adelaide.
25 cks. tallow, 870 bgs. and a quantity lead ore, 24 pigs lead ore.	In the Saratoga, from Calcutta.
39 cs. tallow, 161 hhd. rape oil, 21 hhd. vegetable oil, 15 hhd. castor oil, 2386 bags 2034 pkts. linseed.	In the Hesperus, from Gottenburg.
901 bars iron.	In the News, from Cronstadt.
205 cks. tallow.	In the Dorothy, from Gottenburg.
1127 bars iron.	In the Wendola, from Archangel.
1780 qrs. linseed.	In the Rose, from River Gambia.
563 cakes beeswax, 109 bags gum arabic.	In the Revel, from St. Petersburg.
150 cks. tallow.	In the Glenbervie, from Sydney.
104 cks. tallow, 5 cs. plumbago, 30 cks. sperm oil, 14 bgs. copper ore.	In the Nicolaus, from Calmar.
392 bars iron.	In the Sunbeam, from St. Jago.
488 pcs. fustic.	In the Adelaide, from Bombay and Calcut.
8 cs. saltpetre, 75 bgs. pepper, 216 bgs. senna leaves, 54 chsts. gum olibanum, 996 chsts. dry ginger, 7 cs. gum, 261 bds. 126 bgs. turmeric, 158 cs. ginger, 1087 bgs. linseed, 200 bgs. galls, 75 robins 679 bgs. castor-seed.	In the Arbace, from Port-au-Plate.
7 snns. 14 pkts. beeswax, 2 snns. cassia.	

At one of the late sittings of the Paris Academy of Sciences, M. S. Dumoulin presented a sample of beer prepared by picric acid instead of hops. The preparation of this beer, according to the author, was commenced in the early part of April last, and the brewer employed upon it, having noticed with great attention every one of the different stages, testified that the fermentation proceeded with such great regularity, that it would have been impossible to recognise that hops had not been used. The new process offers a considerable economy, seeing that 25 centigrammes of picric acid would suffice for one hectolitre of beer. M. Dumoulin believed this beer to be preferable to ordinary beer for naval purposes, the picric acid being antiscorbutic. At the same meeting M. Ch. Chevallier presented an opera-glass in which the glasses were peculiarly disposed, affording,

according to the author, the advantage of adding precision and beauty to the instrument. This disposition consists in the employment—1. Of an ordinary achromatic object-glass. 2. Of an eye-glass composed of a convex achromatic and a concave achromatic lens.

Aq. Roaz.—1. Otto, M 35; aq. distil. conq., 1 (Imp.); S.V.R., 3ij.

2. Otto, 3ss.; spirit, 3ij.; sugar, 3iss.; mag. carb., 3j.; aq. dest., 1 gall.

ANNATTO (Towler's).—Spanish annatto, 1 lb.; Castile soap, 6 oz.; turmeric, 3 oz.; pearlashes, $\frac{1}{2}$ lb.; powd. gum arabic, 6 oz.; flour and rice meal, of each, 3 oz.; water sufficient to form a mass.

4 oz. cakes charged 1s.

LAKE LIQUOR.—Cochineal, 1 drachm; water, 8 lb.; strong ammoniacal liquor a sufficient quantity.

ECCLES CAKES.—Roll out upon a sheet of tin some puff paste, until it is about the eighth of an inch in thickness, and let there be enough of it to cover the tin, trimming it round the edges, so that the sheet of paste may agree with the tin in shape and size. Put on to this a layer of Banbury meat, about half an inch in thickness. Roll out another sheet of paste, about twice as thick as the lower piece, and lay it over the top, trim the paste from the sides, and cut it into squares of about 2 inches on the side. Bake in a moderate oven; as soon as it is baked sufficiently, dust the top thickly over with powdered loaf-sugar.

EYE WATERS.—1. White vitriol $\frac{1}{2}$ drachm, camphor 2 oz., boiling water 2 lbs. Dissolve and filter.—2. White vitriol $\frac{1}{2}$ drachm, spirits of camphor $\frac{1}{2}$ drachm, boiling water 1 quart. 3. Liquor of sugar of lead $\frac{1}{2}$ oz., rose water 2 oz., distilled water $\frac{1}{2}$ pint.—4. Take of extract of lead 10 drops, rose water 6 oz.—5. Take of opium 10 grains, camphor 6 grains, boiling water $\frac{1}{2}$ pint. Rub the opium and camphor with the boiling water, and strain.—6. Dissolve 10 grains of the soft extract of opium in 6 oz. of distilled water; strain through fine linen, and then add 2 oz. of liquor of acetate of ammonia.—7. Make a lotion for inflamed eyes with 20 drops of tincture of camphor, 10 drops of solution of sugar of lead, 1 of Goulard extract, and 7 oz. of distilled water.—8. Mix together 1 oz. of the liquor of ammonia with 7 oz. of distilled rose water.

EYE SALVE.—Melt together 13 oz. of fresh butter and 2 oz. of white wax, and stir in, while hot, 6 drachms each of calamine and tutty, 2 drachms each of white lead and camphor, and 1 drachm each of myrrh, aloes, sulphate of zinc, and sarcocolla.

TO CORRESPONDENTS.

* Gentlemen who send manuscript to the CHEMICAL RECORD under arrangement for payment are informed that original matter alone will be allowed to count; no abstracts, translations, or adaptations being receivable under the terms proposed. The propriety of this will be obvious.

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"A Perfumer."—Bergamot Water is prepared by taking two gallons of good old French brandy, one gallon of highly rectified spirits of wine, and one gallon of spring water, into which put 3j of true Roman or Sicilian oil of bergamot, previously well triturated with lump sugar, in a glass mortar. Distil by a water heat, and draw off only six quarts. It will keep for twenty years.

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(Signed)

JOSEPH HENRY GREEN.

Lincoln's-inn-fields, 15th April, 1855.

From BRANSBY COOPER, Esq., F.R.S., one of the Council of the Royal College of Surgeons, London; Surgeon to Guy's Hospital, and Lecturer on Anatomy, &c.

Mr. Bransby Cooper presents his compliments to Mr. George Franks, and has great pleasure in bearing testimony to the efficacy of his Solution of Copaliba in Gonorrhoea, for which disease Mr. Cooper has prescribed the solution in ten or twelve cases with perfect success.

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From H. A. CÆSAR, M.D., Surgeon, Professor of Anatomy in the Cork School of Medicine and Surgery; late President of the Hunterian Society of Edinburgh, &c. &c.

I have frequently prescribed Franks's Specific Solution, and deem it a valuable remedy in cases where Balsam of Copaliba may be prescribed with propriety, and have no hesitation in stating it is superior to any other preparation of the Balsam. (Signed) H. A. CÆSAR, M.D.

South Mall, Cork, Nov. 9th, 1841.

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The National Provincial Life Assurance Society has been established with the view of promoting a greater extension of the principles of Life Assurance generally, and, by applying the principles of Mutual Aid and Co-operation to individuals in every class and condition of life, to secure a system of Education to the Children and Relatives of its Share and Policy Holders.

To effect this truly national and laudable object, and to promote the growing spirit of mental progress on the broadest and most tolerant principles, suited to the highly intellectual acquirements of the present times, a portion of the profits, at each division, derived from the business of the Society, will therefore be set apart for the permanent Endowment of Schools, in which the Shareholders of the Society, and persons assured therewith, will be allowed to nominate Scholars.

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- Fourthly.—To the Shareholders .. 10 per Cent.

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INDUSTRIAL BRANCH.

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AND

Drug Price Current.

No. 6.]

SATURDAY, AUGUST 23, 1851.

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VOL. I.

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- | | |
|---|--------------|
| First.—To the Members on the participating scale, either by a reversionary addition to their Policies, by a reduction of their future premiums, or by a cash payment | 75 per Cent. |
| Secondly.—To the creation of a Fund for the permanent Endowment of Schools, to which Proprietors of Five Shares and upwards, and the Holders of Participating Policies for £300 and upwards, will be entitled to nominate Scholars | 10 per Cent. |
| Thirdly.—To a Fund for the purpose of redeeming the paid-up capital of the Society, together with a bonus of £100 per Cent.; thenceforward the whole of the profits (with the exception of 10 per Cent., which will be applied to the "Educational Fund" until such Fund shall have amounted to £500,000) will be divided amongst the assured | 5 per Cent. |
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ORIGINAL SERIES.

ON THE MANUFACTURE OF GLASS.

By M. REGNAULT.

The process for making window glass in France is such as I have described. In England the result is termed *flatted glass*, to distinguish it from the common window glass, more generally used in that country, and made by a different operation of blowing out of a material called crown glass, which has the following composition :—

- 120 parts white sand.
- 35 parts carbonate of potash.
- 20 parts carbonate of soda.
- 20 parts chalk.
- 1 part arsenious acid.

The manufacture of crown glass into window plates is conducted in a different way to the operation already described, which is the plan generally followed in France. Instead of the workman forming a cylindrical bubble, cutting off each end of the cylinder, cracking it longitudinally, and allowing it to flatten into a plate, he commences by blowing a round bubble, into which he makes an orifice at the point furthest from the attachment of the blowpipe; and then, by a succession of dexterous heatings of the bulb, and wheeling of the tube on its own axis, the centrifugal force thus called into play gradually causes the orifice to expand, until the round bubble assumes the final condition of a circular sheet, having a point in its centre thicker than the rest, owing to the attachment of the blowpipe to that part.

I now come to speak of that sort of glass which is employed for the manufacture of black bottles. For this branch of glassmaking art are used materials of small value, the first consideration in this case, to which all others are secondary, being lowness of price.

For this purpose of the bottle manufacture ochreous sands are generally preferred, because the iron which they contain renders the vitreous compound more fusible than it would otherwise be. Carbonated alkalies cannot be employed, their price being incompatible with the necessities of the case. The alkaline matter is furnished either by the ashes of sea weeds, if soda be desired, and by the ashes of land plants and trees if potash; a considerable amount of washed cinders also enter into the composition of this sort of glass, being added for the purpose of supplying silicates of alumina and potash. Besides these ingredients the manufacturer also adds a variable proportion of old broken glass.

In glass of this description, the amount of oxygen of the silicic acid is double or treble the amount of oxygen of the associated bases. I here append a tabular view of the different substances which enter into this variety of glass :—

Ochreous sand	100
Seaweed ash	40 to 60
Fresh cinders	30 to 100
Washed cinders	150 to 180
Ochreous clay	80 to 100
Broken glass	100 to 150

Bottle glass presents various colours. French bottle glass is for the most part of a dark green, resulting from the presence of protoxide of iron. Bottles produced in certain parts of Germany possess a yellowish-brown colour, dependent on a mixture of sesquioxide of iron and of manganese.

Furnaces for the manufacture of bottle glass generally consist of six crucibles of very large dimensions. In this branch of manufacture it is very essential that the process of fusion should proceed with rapidity, for the sake of econo-

mising the expenditure of fuel. The operation commences by filling the crucibles to the brim, and applying the full force of the fire at once. When the matter has been liquefied, a new charge of material is thrown in as before, and in this manner seven or eight hours usually elapse before the pots get quite filled with their fused material. As soon as it occurs, the operation of bottle making commences, immediately that the scum or *glass gall* has been removed.

The manipulation of forming bottles is as follows :—An assistant first dips the blowpipe or canne into the fused mass, withdraws it, and allows it to acquire a certain consistence, which practice alone makes known. He now dips it again into the melted mass, and, again withdrawing it, hands it to the blower.

This operator gently blows into the mass, so as to slightly expand it into a pyriform shape, and then, by dexterously rolling it on the marber, his first care is to mark out the rudiments of the bottle neck. This being done, he heats the mass again, drops it into a mould at his feet, blows and expands the mass to the full dimensions of the mould, fashioned to the shape of the bottle itself. Returning it from this mould, he next presses in the bottom by the dexterous application of a rectangular plate of iron whilst the glass is in the act of rotation, and, this being done, he next separates, by means of a drop of water, the bottle from its attached blowpipe; he now attaches the blowpipe to the bottom of the bottle, and, drawing a thread of melted glass from the crucible, he winds it around the outside of the bottle's mouth, and thus the finish is given. The blowpipe being now disengaged, the bottle is ready to be sent into the annealing furnace.

Whatever the sort of glass, this operation of annealing is equally necessary, otherwise the glass would be totally unfit for use, on account of its extreme brittleness. The theory of the annealing process may be thus explained. During the natural cooling of glass, it is evident that the external layers must grow hard first, and must thus tend to prevent the contraction which the internal portions of the glass would, if unrestrained, assume; thence between the internal and the external portions of such unannealed glass there must ever be a powerful strain, which easily results in rupture on the application of very slight causes. The process of annealing consists in exposing the glass to a continuous but gradually decreasing temperature for a period proportionate to the kind of glass, the size of the mass to be annealed, and the purpose to which it is intended to be applied.

The property possessed by unannealed glass to be easily ruptured is taken advantage of in the formation of various philosophical toys. Of these, the two most common are Prince Rupert's drops and magic phials.

Prince Rupert's drops consist of a mere drop of bottle-glass, which, from being allowed to fall when still fused into some cold water, acquires a preternatural tendency to fracture. If the tail end of one of these drops be broken off, the remainder falls to powder with a smart explosion, the shock of primary rupture being sufficient to disintegrate the whole mass.

The magic phial to the appearance looks like any other phial, but has a very thick and unannealed bottom. If into one of these phials a few grains of sand be thrown, the slight percussion thus produced generally suffices to rend the whole vessel to atoms.

Crystal, called by the English *flint glass*, is a form of material only employed for objects of luxury. It ought to present a large amount of transparency, a perfect homogeneity, and to be totally devoid of colour. These qualities being so indispensable, a large amount of care is necessary in the choice of materials, all of which must be of the highest degree of purity.

Crystal or flint glass is, chemically speaking, a double silicate of potash and oxide of lead. Its composition as to the relative amount of materials varies in different manufactories. The ratio of oxygen of the silicic acid to that of united bases varies from the ratio of 6 : 1 to 9 : 1; and the ratio of the oxygen of the potash to that of the oxide of lead varies between still wider limits, even amounting to the difference between 1 : 1 to 2 : 5. By augmenting the proportion of oxide of lead, a greater density can be given to flint glass, as well as a higher degree of dispersive power and refrangibility; qualities which give to cut glass much of its beauty; the quantity of oxide of lead cannot be indefinitely increased, because of the yellow colour imparted by it to glass.

For this branch of manufacture the sand employed is of the whitest and purest description; the carbonate of potash is always refined, and the oxide of lead is not common litharge, which contains very frequently little spangles of metallic lead, but *minium*, that is to say, an oxide of lead containing a larger amount of oxygen than the protoxide. This oxide cannot contain metallic lead uncombined, and the large amount of oxygen it holds would prevent the development of metallic lead, even if a portion of coal or fuliginous matter should come into contact with the melted mass.

The most usual composition for drinking vessels is—

300 parts pure sand.

200 parts minium.

100 purified carbonate of potash.

Flint glass furnaces are usually heated with wood; in some, however, coal is used; but in the latter case the form of the crucibles is obliged to be altered. Coal yields a very heavy smoke, the deoxidizing action of which it would be difficult to avoid without the aid of a crucible peculiarly constructed; not open at the top, like those employed in furnaces where wood is the material of fuel, but at the side, an arrangement which prevents the deposition of fuliginous matter upon the glass.

Flint glass is fashioned into the various shapes it is made to assume, both by blowing and moulding. In the production of certain forms both operations are required, as will easily be suggested to the mind of any one at all acquainted with the nature of glass in general.

PROGRESS OF SCIENCE AT HOME AND ABROAD.

TRANSACTIONS OF SOCIETIES, COMMUNICATIONS, &c.

PARIS ACADEMY OF SCIENCES.
Sitting of Aug. 18.

ANALYSIS OF THE WATERS OF FRANCE.

M. Dumas noticed the general results relative to the composition of waters, contained in a work entitled "Sommaire des Eaux de la France," the proof-sheets of which had been laid before the Academy at the previous sitting.

The work contains an account of more than 400 analyses of the fresh waters of France, that is, of the waters of rivers, streamlets, fountains, wells, &c., applied either to purposes of domestic economy, or to some of the most important manufacturing and agricultural uses. The part which contains the fresh waters is now in print; and the second part, which relates to mineral and saline waters, is ready for the press.

The waters which France receives are derived from four

sources: those from the north-east, or Rhenish; those of the north-west, or Sequanian; those of the west, or Gironde-Ligerian, those of the south, from the Rhône.

The six basins of the first order are those of the Rhine, the Meuse, the Seine, the Loire, the Gironde, and the Rhône. Round these are grouped ten basins of the secondary order, those of Escout, the Somme, the Oise, the Adour, the Aude, the Herault, &c. The compilers of the work have, as might naturally have been expected, classed in distinct groups the analysis relating to each of these basins.

In classifying the mineral waters of France according to the elements which they contain in common with fresh waters, and without taking into account their specific peculiarities, such as arsenic, bromine, iodine, &c., which are found in most of them, results, worthy of interest from the fact of their great simplicity, are obtained, and are pointed out in the work alluded to.

Thus, in the waters of the great central district of France, that is to say, of Auvergne, Cantal, Ardèche, &c., the bicarbonates prevail; these form, in fact, 75 per cent. of the solid products of the waters, whilst the sulphates are but 8, and the chlorides 15. In the Pyrennees, on the contrary, whilst the chlorides are the same as above mentioned, the bicarbonates fall to 25, and the sulphates rise to 60. The waters which have their sources in the Alps, and the Corsican waters, resemble the Pyrenean waters in their composition. The Jura, Haute Saône, and the Vosges, furnish sources the waters of which contain chlorides in excess; whilst the sulphates stand at 14, and the bicarbonates at 16, the chlorides rise to 66. In the Ardennes and Hainaut the chlorides and the bicarbonates approximate each other closely, and figure each from 40 to 50 per cent. In the Vendée, Brittany, and one part of Normandy, the sulphates, chlorides, and bicarbonates occupy much about the same proportion, or each about 30 per cent.

Of the fresh waters, those applied to domestic uses, &c., the work contains, as before mentioned, 400 analyses accompanied with an estimate made on the spot of the qualities or defects of these waters. The comparison of so large a number of facts, their discussion, and the varied observations made thereon, tend necessarily to throw a much greater light on this subject than the mere detail of an analysis can supply. The compilers of the work have wisely rejected analyses made many years ago, but, commencing with M. Bernard's work on the waters supplied to Paris, they have culled from various published works, and numerous unpublished documents.

M. Dumas concluded with this remark: "Will the Academy allow me to express one regret? The hydrology of France, established though it may be on accurate scientific bases, is not the only service which chemistry should be called upon to render to the country. There is another for which its intervention must sooner or later be solicited; I mean the analysis of the cultivated soil of those great districts into which our land is divided. In the same way as the geological chart of France is a sure guide for all the combinations relative to the discovery or the working of mines, so a chart which shall give to agriculture the composition of the soil of the surface alongside that of the running waters will prove of immense value in indicating the most beneficial method of manuring and improving the land. Let us hope that the day is not far distant when we shall possess, as dependencies of that geological chart which does honour to our country, agricultural charts, the execution of which, though less difficult, and their merit more modest, will be amply repaid by their immediate and useful application to the most important of the arts."

ON THE ACTION OF A RED HEAT ON ALCOHOL AND ON ACETIC ACID.

M. Balard read a communication from M. Marcellin Berthelot relative to the action of a red heat on alcohol and on acetic acid.

The vapour of alcohol, passed through a porcelain tube

filled with pumice stone and heated to redness, gave charcoal, hydrocarbon gases, aldehyde, naphthaline, benzine, phenic acid, and other substances. The naphthaline obtained was in a crystalline state. It had already been pointed out in the decomposition of alcohol by Sausure and by Reichenbach, and in Dutch liquor by Regnault. The presence of benzine may be shown by passing the gases through fuming nitric acid. The substance precipitated by water possesses a marked odour of bitter almonds, an odour possessed by nitrobenzine; it furnishes, by means of nascent hydrogen, a mixture of naphthalidine and aniline. The presence of aniline is proved by means of chloride of lime, which produces the characteristic violet colour. Lastly, with the naphthaline a volatile oil is deposited, which, from its reactions, appears to be phenic acid.

The vapour of acetic acid, submitted to the same decomposition, withstood, for the most part, the red heat above-mentioned. A part only was destroyed with the production of carbon, combustible gases, acetone, naphthaline, phenic acid, and benzine.

On this subject M. Berthelot makes the following remarks: "It results from these facts that by the distillation through a redhot tube of substances whose equivalents are not high, such as alcohol and acetic acid, we produce the same hydro-carburets and the same substances which are so stable, and so little capable of alteration by heat, which we obtain in the distillation of substances of a complex character, such, for instance, as coal, or the fatty oils. These substances would, therefore, appear to be constant products, essential in the distillation at a red heat of all organic non-nitrogenous substances. It is by virtue of a peculiar affinity that they are produced. Their molecular constitution furnishes no derivative relation with the formula of the matter, the decomposition of which furnishes the products. Nor does their presence imply the identity, in all cases, of these distillations. In this respect the decomposition of acetic acid and of alcohol presents us a totally different aspect. They are the essential products, but not the principal products.

PHOTOGRAPHY.

M. Regnault submitted to the notice of the Academy a photographic proof on paper, representing a view of the sea, which was taken by M. E. Bacot, of Cæn, in a fraction of a second, without a diaphragm, on the 8th of this month. The waves were distinctly discernible.

Sitting of August 25.

ON THE ETHERS AND THE AMIDES OF THE NON-VOLATILE ORGANIC ACIDS.

M. Dumas presented an account of the experimental researches of M. P. Demondeair on the ethers and the amides of the non-volatile organic acids.

The processes employed for the isolation and purification of the neutral compound ethers may be ranged under three general methods, based on distillation, washing with water, and crystallization. All the numerous bodies of this class hitherto discovered do indeed possess at least one of the properties which ensure the success of those methods; all are either volatile, or but slightly soluble in water, or solid at ordinary temperatures; a great number of them unite all these characteristics. But if some ethers do exist which do not present any of these properties, the processes habitually employed are unable to discover them, and M. Demondeair attributes to this cause the deficiency which still exists in the ethereal series of important organic acids, such as tartaric, parataric, and malic acids. Experiment has confirmed this conjecture. M. Demondeair has, in fact, ascertained that the alcoholic and methylic ethers of those acids are all liquid, are destroyed almost entirely by distillation, and are miscible with water in all proportions, the alcoholic ether of malic acid alone forming one solitary exception on the

last-named point: still, however, its solubility is so great that the washing process is in reality inapplicable to it.

M. Demondeair thus describes the method by which he has been enabled to obtain these bodies:—As an intermediary of etherification, either sulphuric acid or gaseous hydrochloric acid may be employed; but he gives the preference to the latter. To isolate the ether formed in the first operation, the liquor is neutralized by a carbonate, and submitted to several agitations with sulphuric ether. This solvent separates the compound ether, and, by distillation, leaves it as a residuary product. The ether thus obtained still contains some water, alcohol or wood spirit, and some salts; of these, the volatile bodies may be got rid of by means of the air pump, or exposure to a slight heat in the open air, and afterwards the salts may be removed by solution in very pure sulphuric ether.

Such are the essential points of the general method; but, in order to obtain more abundant products, as well as products more free from colour, and of greater purity, it becomes necessary to vary the details according to the properties of each ether, its affinity for water, and the series to which it belongs.

An ordinary preparation furnishes a pure ether, at least two-thirds of the weight of the acid employed, and even weight for weight if the quantities of the substances be considerable. These ethers are thus formed as easily as the others, their purification alone presenting some difficulties.

The employment of this method is not limited to ethers very soluble in water, and which the processes at present employed do not allow of our obtaining. In the preparation of these bodies we have sometimes employed sulphuric ether as a solvent, and saturated the acids by means of carbonates, but it does not appear that these two principles may never be combined to form a general process. The cases in which this mode of proceeding is advantageous appear to M. Demondeair to be very numerous. It is well known that the washings with water occasion losses, especially when only small quantities are operated upon at a time. Now, for the ethers capable of separation on the addition of water into an oily stratum, sulphuric acid possesses the property of absorbing them up to the last traces which an aqueous mixture can contain; its employment, therefore, gives, without any sensible loss, the products formed by etherification.

For example, 250 grammes of citric acid, etherified by sulphuric acid, give 16 grammes of citric ether, purified by washing with water. In a similar operation sulphuric ether furnishes as a definite product 75 grammes of ether. Add to this the substitution of hydrochloric for sulphuric acid, and we obtain 200 grammes, that is to say, four-fifths of the weight of the citric acid. For those liquid ethers, which are but little soluble in water, and the tension of whose vapour is feeble at ordinary temperatures, sulphuric ether becomes a real test, enabling us to discover the smallest quantities, and to study the laws of their formation.

In the preparation of the neutral ethers of citric and malic acids, there are acid ethers produced. Malic acid gives rise to malo-vinic and malo-mithylic acids, of which the salts of lime are soluble in water. Citric acid produces at least a vinic acid presenting the same character. In the mithylic series the neutral ether is remarkable for its stability and its beautiful crystallization. The preparation of citro-bimethylic ether is one of the most easy. The citro-monomethylic ether produced at the same time in variable proportions may be easily separated, for its lime salt is very readily soluble in water, and insoluble in alcohol, whilst the citro-bimethylate of lime is very soluble in the latter fluid.

All these ethereal acids are very easily produced by the direct action of the primitive acids in alcohol and wood spirit. The same method appears to be advantageous for the preparation of the analogous combinations of oxalic acid.

The neutral ethers lead immediately to the amides; the regulated action of ammoniacal alcohol, or tartaric ether of alcohol, gives the tartramithane or tartramique ether, which, carefully decomposed by the alkalis, furnishes tartramic acid, very soluble in water and alcohol. By prolonging the action of ammonia we transform tartramithane into tartramide.

The same agent acting on the citric ethers (besides

several intermediary products, which M. Demondesir has not yet isolated), leads to citramide as the definitive product in the two series of alcohol and wood spirit. Lastly, malic ether, in the same circumstances, gives malamide, the composition of which does not differ from that of asparagine. These three amides are but little soluble in cold water, and form regular crystals. The ethers and amides of tartaric and malic acids act in polarized light. The tartramide especially possesses this property in a very remarkable degree.

PERILOUS ASCENT OF PRIMROSE HILL BY NIGHT FOR THE PURPOSE OF DISCOVERING THE DEW POINT, BY PRINCE ALBERT, ALBERT PRINCE OF WALES, AND DR. EPIPHANIUS SCHLAGHINTERN, GERMAN TUTOR TO THE ROYAL CHILDREN.

(Communicated by the Doctor.)

Letter of Dr. Epiphanius Schlaghintern to the Editor.

Sir,—I notice by the public journals that a silly young man has been creating a sort of public notoriety for himself by ascending Mont Blanc, sleeping on its top, and coming down again. Had he gone up for any useful purpose, had he taken with him instruments, as M. de Saussure did, for making philosophical observations, his ascent would have been commendable; as the matter stands, Mr. Albert Smith's ascent and descent can only be regarded as a piece of *ad-captandum* foolishness.

You are aware, sir, that H.R.H. is a practical philosopher; though you little know, the world little knows, how assiduously the Prince attends to the philosophical education of his blessed children. Amongst other matters, H.R.H. has recently been demonstrating to the royal juveniles the nature and properties of dew, and—but, sir, I will give you the information in the form of a narrative, and have the honour to subscribe myself Your obedient Servant,

EPIPHANIUS SCHLAGHINTERN, PH. D.

"It is very hard, my dear Doctor," said the Prince to me one day, "that the outrageous loyalty of these English won't permit me to go about like any other gentleman without being mobbed. Suppose, for instance, that I should like to pay a visit to the Royal Society, or the Society of Arts, or the Royal Institution—it could not be done. To go with a long retinue of guards up to the thresholds of these peaceful regions is not quite the thing; and to go without would be impossible; so you see, my dear doctor, it ends in this—that I cannot go at all."

"May it please your Royal Highness," I replied, "societies are doubtless well and useful enough in their way, but to a philosopher, endowed with your natural acquirements, the information they could convey must be but small."

"Do you really think so, Doctor, or are you merely playing the courtier?"

"I would not dare to play the courtier, sir, to a Prince whose knowledge of human nature is so profound," replied I, "certain that any deceit would be penetrated by your Royal Highness's acumen."

It need not be said that I accompanied this reply with a very low bow. The Prince looked at me inquiringly; I thought angrily; at last his left moustache slightly curled, which phenomenon I have noticed to be indicative on other occasions of his Royal Highness's displeasure. I, however, regarded him steadfastly without quailing, as, indeed, I had no occasion to do, for my words were pure and truthful as my heart. So the countenance of H.R.H. presently began to gleam with a sweet smile.

"Doctor," he said, "I have been engaged in teaching the children the true theory of dew as proved by Dr. Wells, and an idea has just occurred to me, that I can illustrate it admirably by a new kind of instrument."

"A new form of hygrometer, sir, may I presume to ask?"

"Oh! no," replied the Prince, "a new instrument of which I am the discoverer; the idea has just come into my head; so run and fetch the royal children, I will proceed to explain it."

Upon hearing this, I turned my face to his Royal Highness, and began to make my way towards the door as fast as the retrograde plan of courtly motion would admit of,

when the door flew open, and oh! horror! I suddenly found myself, not *vis-a-vis*—what *can* I call it?—right against the Queen! I am a tall individual, and her Majesty is short—circumstances which made the matter worse. What could I do? My presence of mind did not desert me; I immediately fell on my knees, adroitly turning on one side in such a manner, that I might neither turn my back on her Majesty or on the Prince. There I remained, my eyes humbly cast down to the earth, and my hands clasped together in a supplicating mode.

The two royal personages were at first, like myself, considerably embarrassed; but the blessed children, who came running in with the Queen, began to laugh so heartily at my mishap, that presently the two royal personages commenced laughing also, and told me to get up. For a time, as may readily be imagined, there was a sort of embarrassing silence; the Queen twirled her fan, and the Prince stroked his moustache; but this state of things was at length put an end to by the dear little Princess Alice, who, unnoticed by the others, had been seemingly playing with the leaves of her picture book, which contained illustrated descriptions of animated beings.

"Papa," said she running over to the Prince and jumping upon his knee.

"Yes, dearest."

"You cannot think how I have been delighted with that beautiful dragon-fly, which comes every morning to fly about in the garden over the fish pond. I have been watching him for more than two hours; sometimes he would dart straight forward; sometimes on one side, and sometimes he would come back like an arrow without turning. He must, indeed, be a very clever dragon-fly, for when I saw him darting backward, I held up my parasol and tried to catch him; but all at once, he seemed to know what I was about, turned on one side, and was gone!"

"No, dearest, he is not so clever as you think; the dragon-fly is provided with very wonderful seeing organs; he has got a great number of eyes, tied together in a bundle, some looking forward, some on one side, and some backward. The dragon-fly, my love, eats up little buzzing gnats and other insects, which would easily escape him if he could only see straight forward. So you see how good God is to give the dragon-fly the organs he requires."

The Princess Alice appeared lost in thought.

"Papa," said the Prince of Wales, "I suppose that if the dragon-fly had not wanted eyes behind he would not have had them."

"Undoubtedly not, my dear."

"What are those dear children driving at?" interrupted the Queen.

"And every animal," continued the Prince of Wales, "that requires eyes behind has got them?"

"Yes, God gives every being what is necessary for his wants, my dear; but, Albert, come here, boy, let us talk about the dew, that you said yesterday rose from the earth."

"Oh, yes, papa,—but will you tell me how it is that the Lord Chamberlain and all the others who attend to us have not got eyes behind?"

"What nonsense those children talk," interrupted the Queen; "my dears, you must not ask such things—you really must not!"

"Mamma, dear mamma," said the Princess Alice, "papa tells us never to be above asking when we do not understand. I want to know, if God had meant people to walk backwards, whether he would not have given them eyes behind? There—only just now the doctor ran—"

"Silence, child!"

"Ran—"

"I really will send you away," interposed the Queen.

"Ran up against your face, and so funnily too! ho! ho! ho!"

Loud and hearty was the laughter of the royal husband at the inquisitiveness of the dear child; and the laughter encouraged her in her importunity.

"Bravo!" he said, "bravo! I will give you sixpence, my darling;" so, putting his hand into his pocket, he hunted about,—but not finding what he wanted, the Prince desired

me to summon Colonel Phipps. Quicker than thought I did my bidding, and as quickly entered the honourable gentleman to attend to the Prince's will.

"I am out of cash," said Prince Albert, "having just returned from Ipswich. Give the Princess Alice sixpence out of the privy purse."

Colonel Phipps did as he was bid.

"And now my dear children," said Prince Albert, after a few moments' pause, I will tell you all about the reason of dew, or rather I will call your own reasoning powers into action, so that you shall know all about it without being told.

"I know what it is Papa," said the Prince of Wales, "it is a sort of rain."

"If it be a sort of rain, it must come from a cloud, boy, must it not?"

"Clear as the blue Peter to a sailor's sweetheart, when her eyes have sprung a leak," replied the sailor boy.

Words would but inadequately describe her Majesty's horror at this expression. It was some time ere she could speak, and when she did so her words came gasping forth, in a way that my pen can ill describe.

"Blue Peters!—sailors' sweethearts—eyes springing a leak!—Albert dear," said the Queen to Prince Albert senior (for so, to avoid confusion, we must call him), what does this mean? the boy gets more vulgar every day;" and so saying, she sank exhausted into the Prince's arms.

"Nonsense, dearest," said he, patting her under the chin, "it is a very harmless sea phrase; there is nothing vicious in it."

"D—l a bit, papa," said the young Prince, "innocent as six water grog on an empty stomach—or a sucking porpus; howsoever, ma'am, should your Majesty command," said the young wag, with an arch leer, "I'll take my jawing tackle in a reef, and let your Majesty have the weather side of me, d'ye hear?"

Although the Queen was at first considerably shocked with the sea slang of her son, she eventually could not resist being pleased with his boldness. "This boy is in heart a hero," I heard her whisper to Prince Albert, "he is an ornament to his sex."

Of course these expressions were not intended to be audible; I heard them nevertheless. The Prince of Wales heard them too, if I mistake not, for, young scapegrace as he is, I saw him do that which he certainly would not have done except he had the warranty of his mamma's presumed approbation. Putting one thumb to his nose, he extended his hand, and then, touching the thumb of the other hand to the little finger of the former, he looked at her deliberately and ran away.

"Stop, there, you young scaramouch," said Prince Albert, as the Prince of Wales had just reached the door, "Come back."

"Aye, aye, sir," cried the boy.

"Philosophy before fun, sir, if you please; come here."

So the Prince of Wales came near to his papa.

"If dew were really a kind of rain, it would come from the clouds; but it does not, the best proof of which is, that whenever the nights are cloudy dew does not form."

"Indeed, sir," said the Prince of Wales.

"Then it must rise from the earth," interposed her Majesty.

"No, nor does it rise from the earth," replied Prince Albert.

"Well, sir, all I know is this," rejoined the Prince of Wales, "that such blades of grass in the Osborne garden as are covered with the marquee are quite dry, whilst the grass which is exposed becomes covered with pearly dew-drops."

"Very probably."

"Well, does not this fact prove that dew falls from the sky?"

"We shall see by-and-by," replied Prince Albert.

"It at least proves this," interposed the Princess Alice, "that dew does not rise from the earth;—because, in that case, the marquee, by confining it, should prevent its escape, and the grass standing under the cloth roof should be wetter than the rest."

Great was the joy of Prince Albert on hearing so profound an expression from the lips of one so young; he rushed, rather than ran, to where the Princess was sitting, caught her in his arms, and almost smothered her with kisses. Then running to the sugar basin, which was near, he took out a large lump and thrust it into her mouth.

"Nothing can be more common, my dears," said Prince Albert, as he sat down with the Princess Alice on his knee. "Nothing can be more common," proceeded he, as the little girl crunched her sugar, "than the expressions that dew rises from the earth—or that dew falls from the sky—but nothing can be more incorrect. In the first place, dew does not form on cloudy nights, nor does it deposit especially in localities where the soil is moist. In the broad Pampas, or grassy vales of South America, it seldom rains, and water is most rare, yet the dews are very heavy, so heavy, indeed, that they compensate for rain, and pools, and streams. It is clear, then, that the popular notions of dew are fallacious—most fallacious; and it remains for an English philosopher, named Dr. Wells, to explain the true reason of its formation, which depends upon the property of heat, called radiation. If I take a poker all glowing from the fire, the poker darts off its heat in rays by the process termed radiation. This is an extreme case; all bodies contain some heat, and hence this function of radiation is always taking place. Now to carry out my explanation by means of a hot poker, let us suppose this poker to be put, all glowing, into an atmosphere of steam. Whilst red hot, or black hot, or even sensibly hot to the hand, it is quite evident that its surface would not become wet from the deposition of steam; but if it continued getting cooler and cooler until colder than the surrounding steam, then it is evident the latter would settle on its surface in the form of dew. For the same reason it is, that a bottle just brought out of a cellar is covered with pearly drops, simply because the bottle has radiated or dispersed its heat to such a point that it has become colder than the surrounding moist atmosphere; for every natural atmosphere is moist to some extent, and hence is only a lesser addition of our assumed atmosphere of steam. Applying now this philosophy to the earth's surface, as regards heat, let us see what should take place. The natural effect of the sun's rays must be to raise water in vapour; and, other things being equal, there will be most vapour in the air when the days are hot. Of course I mean invisible vapour; I do not include clouds, or mists, which are only a low flying sort of cloud. During the daytime, whilst the sun is shining, the earth becomes very hot, but no sooner does night arrive than the earth's heated surface begins to radiate its temperature away."

"Ah! where does the heat go to, papa?" said the little Princess, who had by this time finished her sugar.

"That depends upon circumstances, my dear; if there happen to be no clouds, the heat flies away into the high heavens, and we may call it lost; so that the earth soon becomes colder than the surrounding moist air, and therefore the air's moisture forms a dew on the earth's surface. But if there be clouds, then the heat cannot get into the high heavens, but is caught by the cloud, just as you tried to catch the dragon-fly in your parasol."

"And what do the clouds do with it?" said the Princess Alice, inquiringly.

"Why, my dear, they send it back to the earth again where it came from, and so the earth and clouds play battle-dore and shuttlecock with the heat all night long, in such a way that the earth cannot get cold enough to chill into dew-drops the moisture of the air, and this is the reason why dew won't form in cloudy nights."

"I see—I see," interposed the Prince of Wales; "then dew, I suppose, by artificial means, could be made to deposit in the day-time?"

"Unquestionably: for this purpose nothing more is necessary than to produce such a coldness or depression of temperature as shall be lower than the surrounding air; and the precise temperature at which dew thus becomes deposited is called the dew point."

"There's nothing like reducing things to practice, papa, as Captain Crispin told Swilling Bob one day, when Bob half-slewed, said he could walk the plank. If your yarn

about dew be all right, it might be proved in this manner:—In the Highlands I have often seen a cloud half way up a mountain; that is to say, I have climbed up the mountain until I have got above the cloud. Now there should have been no fall of dew below, but there should have been a fall of dew above. What will you lay it is so?"

"You saucy fellow," rejoined his papa, "you are right and you are wrong. Did you never consider that high mountains do not get so hot by day as low grounds, and therefore do not contain so much heat to radiate away? Did you never consider, moreover, that the atmosphere high up gets so rare that its capacity for holding moisture is much impaired? You see, then, I would not accept your wager, to be determined by reference to the dew-phenomena of a high mountain; but, most readily would I appeal to the issue of a low hill, half way down which was floating a cloud. Such instances are not rare; frequently, for example, there is abundant dew at Highgate and Hampstead, when there is none in the metropolis."

"Very good, papa; then I tell you what, suppose we get some one to watch near Primrose-hill, for the purpose of telling us when a mist (which, I suppose, you call your cloud) stands half-way up that hill: when this occurs, the messenger could run and tell us, and we could immediately set off."

Ever ready to comply with rational desire, my royal master took immediate steps to conform to the wishes of his child. Four trustworthy persons were selected from the royal household—and ordered to stand on the four cardinal points at the base of Primrose-hill—for the purpose of giving immediate notice at Buckingham Palace of the necessary meteorological conditions. At length, about a fortnight having elapsed, the long-desired cloud hovered half-way down the celebrated metropolitan elevation, and an excursion, not altogether free from peril, came off, the particulars of which I will presently detail; but I take occasion here to say, that the excursion would have remained a profound secret to all except those concerned, had the recent purposeless ascent of Mont Blanc by Mr. Smith not brought prominently before my mind the contrast between the *ad-captandum* vagary of Albert the author—and the philosophically-conceived idea of Albert the Prince.

A fortnight had elapsed, as I have said, and day after day came the message to the palace, that the weather did not suit. At length, one evening, as her Majesty, the Prince, and the royal children sat over their tea, a clattering of horses' hoofs was heard in the yard. The sun had already set, and the heavens gave promise of tranquillity. The Prince's bosom burned with feeling almost too big for utterance as he ran to the window, threw it wide open, and called out, "Does it suit?"

"It *does* suit, your Royal Highness," said the courier, making a salute.

Immediately I was summoned to my royal master's side. "We start this instant," said the Prince; "Doctor, are you ready?"

"Ready, and at the service of my royal master," I replied.

"And I—and I," exclaimed the royal children.

"You cannot go, my dears," said Prince Albert to the Princesses. "The journey is dangerous, and the night is dark."

The Princesses hung their heads, but did not complain; their demeanour was, as it always is, most exemplary.

"Run, Helena, my dear, to one of the ladies of the bed-chamber, and ask her to bring me a blanket," said the Prince.

"A blanket, papa?"

"Yes, a blanket; I want to take it with me for the purpose of erecting it on four poles; I will explain particulars to-morrow."

The little girl did as she was bid, and presently in came the Duchess of Norfolk, with a blanket under her arm.

"Take this blanket," said the Prince to me, "and also supply yourself with four sticks."

Accustomed to obey, I immediately did as I was commanded.

Darkness had now set in to favour the royal project.

I had imagined that a small equipage would have been in waiting; but the Prince, devoid of all ostentation, preferred going in a street cabriolet.

"We shall be the less exposed to detection," said he to me, "by taking this course. People are all on the alert in this sharp metropolis,—so that even the departure of a pony phaeton at this time of night from Buckingham Palace would set such a *cortège* on the move as none of us would like."

So, putting a bottle of brandy in his pocket—wrapping himself in a cloak—and taking with him the door key, the Prince and the royal children and myself set out on our excursion. Passing the sentries, the Prince gave a sign which was understood; they did not even present arms, but allowed us to take our course as though unnoticed.

Passing along St. James's-park towards the Duke of York's column his Royal Highness stopped short, looked at it, and heaved a sigh.

I did not presume to interrupt his reverie; he sighed again, and at length broke silence thus:—

"Is it not strange, Doctor," said he, "that these English have so little taste for art? See that statue transfixed by an ugly spike; there it is! night is not black enough to hide it; the poor duke looks like some malefactor of Sumatra impaled by the Dutch. Did ever one see such a violation of good taste?"

"Is it not a lightning conductor, sir?" quoth I.

"It is intended for such," rejoined the Prince; "but the violation of science is as great as the violation of taste. The statue is of bronze, and therefore, according to all the dictates of electricity, the proper way of protecting the column would have been to connect a copper rod with the feet of the statue and bring this rod down into the earth. This connection might have been made invisible by leading the rod down the centre of the column; or nearly invisible by leading down a fluting; nay, even this precaution would have been unnecessary, seeing that a metal staircase goes from the foot of the column to its top. Safety against lightning, then, would have been abundantly insured by connecting one end of the staircase with the statue, and the other with the earth. How preposterous! Let us pass on."

So we all rapidly ascended the steps, hurried into Waterloo-place, called a cab, and ordered to be set down at Chalk Farm.

Various reasons induced the Prince to commence his ascent on the eastern or Chalk Farm aspect of the suburban mountain; in the first place, he hates the sight of Langham-place steeple, which he says is barbarous; and this object, had he determined on making his ascent on the Regent's Park side, he would probably have perceived. In the second place, the western aspect of the declivity is unbroken by any resting place; whereas the other is dotted over for some distance from its base with various houses and sheds, the last being termed the half-way house, where it was agreed that we should rest awhile and recruit our strength.

Whilst we were rapidly rolling on along Tottenham-court-road, the Prince, who had been silent for a long time, spoke thus:—

"Our excursion would seem a very common-place affair; but, considering my elevated rank, considering the position which these dear ones bear to this country, the exploit is not without its anxieties. God grant us a felicitous issue!"

"Amen!" said I.

The Prince of Wales did not at all like the notion of being afraid of anything; but, squaring his little fists, he said, "I'd like to see the man that would hurt either of us. Wouldn't I pummel him; that's all?"

"You cannot pummel pistol-bullets, my dear," replied the Prince, "neither can you pummel people who would press around us if they knew who we were, and smother us with kindness."

"There is another danger, Doctor," continued the Prince, addressing himself to me; "if we should be discovered by some lurking artist or scene-painter, we should all of us be in a diorama within a week."

"God forbid, sir!" replied I.

By this time we had arrived. The Prince and his royal son got out first, leaving me to pay the fare, which I did, to the driver's satisfaction. Casting our eyes up the

hill, great was our delight to behold the cloud suspended midway; not a well defined cloud either, but sufficient, probably, for yielding us approximate results.

Hurrying through the precincts of the Chalk Farm, I carried the blanket and the four poles—the Prince and the royal child keeping by my side. We pressed on until the habited region was past,—when we paused for a few instants to determine what next was to be done.

"It will be necessary that we in this spot make our first observation," remarked the Prince to me. "We must each of us stoop down, and satisfy ourselves as to the hygroscopic state of the grass." This we did separately; and at the Prince's command I spoke first—expressing my opinion that the dew was either trifling or nil, an opinion which the Prince said thoroughly accorded with his own.

"And now," said the Prince, "for our great ascent."

Whereupon we all directed our eyes aloft. The sight which there met our gaze was grand—sublime—mysterious! a hazy darkness enveloped the suburban giant as with a mantle, so black and dense that we could not see the mountain top, and the sounds of the teeming Babylon, fleeing to us on the zephyr's breeze, seemed like whisperings of a whole legion of ghosts! The heart of many a young person might have quailed with fear in such a position, but I am bound to say that the royal children contemplated it without any feelings save those of deepest enthusiasm.

Arrived thus far, we all fortified ourselves by a little brandy out of the Prince's flask, and prepared for our crowning ascent.

"Have you ever been in this region before, Doctor? I confess my total ignorance of it," said the Prince to me. Whereupon I told him that once upon an occasion I had been there before, a piece of information that afforded so much satisfaction to H.R.H. that he commanded me to lead the way. I proceeded to do this court fashion, but the Prince's naturally benignant disposition now shone forth. "Danger and anxiety," he said, "remove artificial restraints, and make men equal; do not hesitate to walk face foremost."

And now I feel a delicacy, sir, to intrude on your pages to the extent I have done, and therefore shall omit the details of our further ascent; suffice it to say that, pressing upwards, we became enveloped in the murky cloud which hid the earth and heavens from our gaze.

We paused!

"To return, methinks, were as perilous as to proceed!" remarked the Prince.

"Splice the main-brace, and go ahead," cried the Prince of Wales, as, quicker than thought, he put his hand in his father's pocket, and withdrew the brandy flask for the purpose of taking a sip.

Then plucking up our strength we hurried on.

How shall I find words to describe the view which next met my gaze!

Scarcely a dozen steps had we made since our last halt,—when our heads emerged as if by magic from above the misty expanse; and the moon now rising in the heavens showed the grass blades all spangled with dew-drops at our feet!

"It would be more than folly to stoop for the purpose of making an observation here," remarked the Prince; "the dew is so profuse that it wets our feet."

"We will now erect the blanket on the four poles," said he "one at each corner, by which means that portion of the earth which lies immediately under the blanket will be prevented from radiating more heat; and I have no doubt we shall find, by waiting long enough, the dew of that portion gradually disappear. We thereupon began to erect our blanket, when a sound met our ears coming from the direction of the Hampstead water-works tank, on the western side of the hill.

We all listened.

The voice was of a man soliloquizing.

We left our occupation and hurried towards the spot. The voice became more and more distinct; we now began to discern the words.

"Ambition, fatal ambition, has brought me to this," ejaculated a dark figure of a man, who was trying to scale the wall of the water-tank. "Ambition of parliamentary

honours has brought me to this, and now it only remains for me to die!"

Approaching nearer, I saw the figure deist from his attempt to scale the wall, which apparently was beyond his power to mount; he sank exhausted on the ground, and, pulling a bottle from his pocket, he drew the cork.

"Poison, or drowning, that is the question," ejaculated the voice again.

"And yet not poison," continued he; "it shall never be said that the founder of the—Society killed himself with his own slops; no! my pockets are weighted with heavy stones. I will plunge into yon watery abyss, and, sinking to the bottom, none shall know whither I have gone. My disappearance shall be a mystery, over which people shall ponder with amazement, and speak of with shuddering. Yes, I will commit myself to that cold aqueous abyss, where my corpse shall lie quiet and undisturbed until that far-off day when some yet unborn board of health clears out yon tank."

"Heavens!" said the Prince, "that being meditates self-destruction; let us save him."

We therefore hurried stealthily towards the figure, who was so wrapped in his meditations that our approach was unobserved.

"And now," continued he in his soliloquy—

"Adieu all earthly aspirations, all earthly hopes, my pictures—my pills—my borough—all farewell." Thereupon, collecting all his strength, and making one desperate leap, he would have bounded clean over the reservoir wall had not the Prince and myself rushed over and caught him by the legs.

It was the member for St. A—!

This event brought our observations to an abrupt conclusion; not, however, until we had demonstrated to the royal children the true nature of dew.

Chemical Record

AND

DRUG PRICE CURRENT.

SATURDAY, AUGUST 30, 1851.

DR. NORMANDY ON THE ADULTERATION OF FOOD AND DRUGS.

The first paper of this valuable series, which was intended to appear in our current number, must, in consequence of details which would not interest our readers, stand over until next week, when the series will commence with the *adulteration of bread*.

If the general dissemination of the knowledge contemplated by Dr. Normandy can be said to be more desirable at one time than another, surely that time is the present, when the legislature, powerless to interpose its strong arm for the prevention of adulterations of the articles of our food, seems to act on the assumption that every man should be his own chemist, and take care of himself; when the government, for the sake of an insignificant revenue on quack stamps, lends positive aid to our flourishing empirics; when each new coroner's verdict of manslaughter is set aside by the collective wisdom of superior courts, and the perpetrators of the moral, though not the legal, crime, are sent back to practise again the iniquities of their art.

So far from a trial before a criminal court being a matter of fear to these disgraceful impostors,—we are well advised that they look on such as an advertisement; that they place on one side the remote chances of a conviction, and the certainty of increased fame and business on the other; and that, far

from becoming more tender of human life, in deference to the terrors of the law, they consider it their major interest to get up a good telling *ad-captandum* case of manslaughter.

It is hardly to be doubted but that men who advertise so much as the empirics are thoroughly well versed in that branch of mathematical science which bears on the statistics of their own case. Given a certain per-centage of triumphant escapes before a criminal court of those who have been committed by the verdict of the coroner's jury for manslaughter,—the application of this useful knowledge becomes mere actuary's work, and the manslaughtering empirics would not experience any difficulty in calculating the mean value of criminal notoriety, as compared with a given length of newspaper advertisements.

It need scarcely be said that this power of killing people by physis is an unenviable peculiarity of our own free country, and one that has been so long and so extensively practised, that the populace, viewed in the aggregate, has ceased to attach to it its just measure of turpitude. Perhaps the most efficient means of awakening a public sense of its dangers and its follies will be the means chosen by ourselves.

In the papers by our talented coadjutor, Dr. Normandy, the public will be presented with the analyses of popular quack medicines; and the effects of their various ingredients will be pointed out. By this means, two ends will be subserved; those who are reasonable enough to see the folly of committing health, that most precious boon of life, to the tender mercies of a quack, will be saved many an infliction; those, on the other hand, who enthusiastically persist in swallowing the cherished nostrums, may purchase the materials, and make them,—each individual for himself.

FAILURE OF GUTTA PERCHA SUPPLY.

Nothing can better demonstrate the amazing development which a successful branch of manufacture speedily acquires than the history of gutta percha. A few years have sufficed to render this remarkable material, at first a mere botanical curiosity, one of the best known articles of British manufacture. Pages would not suffice to enumerate, even in a catalogued form, the multifarious uses to which this substance has been, by the ingenuity of British manufacturing skill, applied; and fresh purposes which this useful body admirably subserves occur so uninterruptedly, that it would be impossible to assign a limit, beyond which they might not hereafter, by manufacturing ingenuity, be made to extend.

It is painful, therefore, for the scientific journalist to have to record the undoubted fact of a failure in the supply of this vegetable product. Unlike the trees and plants which furnish caoutchouc, which are spread in thick profusion in various parts of the world;—which are of rapid growth, and which yield their juice by tapping, without necessitating their own destruction; the geography of the gutta percha tree is exceedingly circumscribed; being restricted, so far as we know, to some portions of the straits:—of Borneo, and probably certain other regions of the Indian Archipelago. It is of slow growth, and the valuable material has only hitherto been obtained by totally destroying the tree.

Hitherto, gutta percha has been brought almost exclusively from Singapore; but so scarce has the article become

at that port, as we learn from good authority, that, if no other source of supply be discovered, many operations to which gutta percha has been successfully applied will experience a pressure not easy to be alleviated. Already the price of the material has run up from 6d. to 15d. per lb., and must still eventually advance; notwithstanding that a large quantity, in consequence of an extensive city failure, may now come into the market.

At the present crisis, when a new source of gutta percha supply is a matter of such pressing importance, the attention of those interested is turned to Borneo. In that vast island-continent, there are large tracts covered, we are informed, with the gutta percha tree. We trust that the explorers in search of them may be successful, and that so important an article of British commerce may not fail. It would be well, also, to put any fresh source of gutta percha under some sort of botanical supervision, so that the substance might be obtainable without killing the tree. The remarkably small space of time in which we have exhausted the resources of our old region of supply should impress us with prudential forethought in regard of economising the new.

REVIEWS.

ANSTED ON GEOLOGY.*

(Continued from page 116.)

"104. By climate (as Humboldt has expressed in his 'Cosmos,' vol. i. p. 312, English translation) we understand 'all those states and changes of the atmosphere which sensibly affect our organs; temperature, humidity, variation of barometric pressure, a calm state of the air, or the effects of different winds, the amount of electric tension, the purity of the atmosphere, or its admixture with more or less deleterious exhalations, and, lastly, the degree of habitual transparency of the air, and serenity of the sky, which has an important influence, not only on the organic development of plants, and the ripening of fruits, but also on the feelings and whole mental disposition of man.' Many facts bearing on climate have been already touched on, and we have here chiefly to consider the modifications of it dependent on position, and the various changes (not merely possible but certain) that would ensue from an alteration in the absolute proportion of land and water, and the relative position and arrangement of the land that may at any time exist.

"105. Climate in this sense is chiefly determined by averages of temperature, not only of the year, but also of the different parts of the year. If lines are drawn through places in which the same quantity of heat is received annually, or, in other words, in which the mean annual height of the thermometer is the same, we shall find that while pretty regularly parallel to the equator, and to each other, where it is possible to connect observations made at sea, still, when we trace them over continents, they have little reference to latitude, but are modified by the form and position of the great masses of land, and the principal marine currents which we shall presently consider. If similar lines are drawn through places having the same mean summer or winter temperature, we shall here again find that a great divergence is presented, so that these three sets of lines are quite distinct from each other, and dependent not nearly so much on position with regard to the equator, or the poles, as on their position on the land, the vicinity of large level tracts, whether lofty or low, the neighbourhood of mountain chains,

* *An Elementary Course of Geology, Mineralogy, and Physical Geography.* By David T. Ansted, M.A., F.R.S., &c., Professor of Geology in King's College, London; Lecturer on Mineralogy and Geology at the H.E.I.C. Mil. Sem. at Addiscombe, and at the Putney College; late Fellow of Jesus College, Cambridge. London: John Van Voorst, Paternoster-row, 1850.

of large rivers, or arms of the sea, or of the great ocean itself and, in a word, with every physical feature of the earth, no matter what it be.

"Climate has been found to depend chiefly, then, on matters totally independent of absolute heat as derived from the sun, and so much is this the case that places in the same latitude on the east and west coasts of North America, in latitude 57°, show a difference of mean annual temperature amounting to 20° Fahr.; other places differing as much as 13° in latitude have the same mean annual temperature; and Dublin and Buda (Hungary), having the same mean annual temperature, exhibit a difference in mean temperature of one of the summer months (August) amounting to 9° Fahr., and a difference of 12° in mean winter temperature.

"106. It results from such considerations, and from the very numerous facts observed in this department of science, that the total quantity of heat received upon the earth from the sun depends almost entirely on the circumstances under which the heat is received, for if the atmosphere were uniformly clear and dry at one time, and uniformly cloudy at another, the quantity of heat reaching the earth would vary enormously. So also if the land were all distributed in small islands, and not chiefly in great masses, the heat received would be immediately distributed, and an average or insular climate would prevail everywhere. If the land were all in very lofty masses at one time, and all in low plains at another, the temperature attained must again differ to a very wide extent, being least in the former case, and greatest in the latter. And if, lastly, the land were all collected towards the equator at one period, and all thrown towards the poles at another, the temperature would again exhibit vast changes, the maximum being attained in the former case, and the minimum in the latter. That the land is distributed as we now find it does not seem to be the result of any abstract necessity, and it would seem perfectly consistent with all known laws, and all existing causes, if it either had formerly, or should have hereafter, a totally different distribution, and rise above the water in proportions altogether unlike the present. Sir Charles Lyell has illustrated and enlarged on these possibilities in the seventh chapter of his 'Principles of Geology,' and the reader is referred to that work, and to the Essays of Humboldt, for many important views bearing upon the subject.

"107. Lines joining places having the same mean annual temperature, the same mean summer, and the same mean winter temperature are called respectively *isothermal*, *isothermal*, and *isocheminal* lines (from the Greek words *isos*, equal, *thermos*, heat, *theros*, summer, and *cheimon*, winter). The former (isothermals) are those most generally regarded as important; but the latter are also extremely influential in governing and limiting the ranges of vegetable and animal life, and the profitable growth of various plants valuable to man. Thus the vine requires great heat in summer, but can endure extreme winter cold; so that it produces rich and valuable wine in Hungary, but hardly ripens in Dublin, its limit of mean summer temperature being above that of the coast of Ireland. The limits of the profitable growth of the vine are the isothermal of 50°, the isothermal of 65°, and the isocheminal of 33° Fahr. It will, of course, be understood that we are here speaking of heights not greatly above the sea-level, as elevation diminishes the temperature in all cases.

"108. The following table, copied from Martins' translation of Kämtz, will give a general outline of the conditions of mean annual temperature on the two sides of the Atlantic:—

Mean annual temperature or Isothermal.	Latitude on American coast.	Latitude on European coast.
25° C = 77° Fahr.	24° 21'	18° 49'
20° " = 68° "	32° 20'	31° 27'
15° " = 59° "	38° 24'	41° 33'
10° " = 50° "	41° 30'	52° 3'
5° " = 41° "	44° 51'	60° 7'
0° " = 32° "	51° 57'	66° 48'

"109. It has been attempted to determine approximately the mean annual temperature of particular portions of the land. Thus the temperature of the tropics generally on the coast is considered to amount to 81½° Fahr., but in the

interior it is generally higher. The temperature of the north pole has in like manner been estimated, Arago having calculated that the land, even if surrounded by water, cannot possess a mean heat so high as the zero of Fahrenheit. But it is likely that this estimate is too low, and that the real temperature is nearly 17½° Fahr. The temperature of the south pole is probably much lower. Lastly, the mean temperature of the whole surface of the earth has been found by Dove to be 58.2° Fahr., being about 54° in January and 62° in July.

"110. Attempts have been made to determine the equator of heat and the poles of cold. The former is not very satisfactorily made out; but with regard to the latter there are probably two such points in the northern hemisphere, one being in America and another in Siberia.

"111. Below the surface of the earth, to a certain small depth, the temperature of the rock rises and falls slowly in accordance with the changes that take place at the surface itself, but at a depth varying from a few inches to 40 feet the range becomes scarcely perceptible. There is thus at a certain depth a stratum of invariable temperature, and below this any increase that is observed must belong either to heat actually present in the interior, or to heat absorbed gradually at a former period of the earth's existence, or else to chemical changes now going on. It has been usual to assume the former igneous fluidity of the earth as a sufficient and ready explanation of this and some other phenomena indicating a present high temperature at small depths; but whether all the other possible causes have been fairly considered may, perhaps, be doubtful. The fact, however, is an important one that, for such moderate depths as we are able to attain by artificial means, there seems a regular rate of increase.

"According to Boussingault's researches, the stratum of invariable temperature within the tropics in South America is not more than a foot or two; but, by observations made at Trevandrum by Mr. Caldecott, in 1842 and 1843, the temperature there varies greatly even at the depth of six feet. In latitudes 48°—52° N., the depth of the stratum varies from 60 to about 64 feet."

SPECIFICATIONS OF CHEMICAL PATENTS.

Francis Papps, of Camberwell, chemist, for improvements in metallic and other bedsteads, mattresses, and curtain rods, and in the coating of bedsteads and other articles, wholly or in part composed of metal. Date of patent, December 7, 1860. Date of enrolment, June 7, 1861.

The specification of this patent contains several improvements relative to the construction of bedsteads, &c.; as these, however, do not come within our province, we pass over them to notice the following improvements as specified:—To render mattresses waterproof, so as to fit them for life-preservers in case of shipwreck, the patentee coats them with a solution, made by dissolving indiarubber in rectified coal tar spirit, or other readily vapourizable spirit.

Another part of the patentee's invention relates to coating or covering bedsteads or other articles formed wholly or in part of metal, or alloys of metals, by means of voltaic electricity. Any of the known solutions of metals may be used for this purpose, the anode employed being of the same composition as that of the metal or alloy required to be deposited from the solution used; for instance, if an alloy of gold be required, the anode should be formed of a compound containing from one to 20 parts of copper, and about 40 parts of gold; if an alloy of silver, the anode should be composed of from one to 30 parts of copper, and 30 parts of silver: if brass or bronze be required, the anode should be formed of a mixture of copper and zinc in the case of brass and copper, and tin in that of bronze, the relative proportions of the two metals to be about the same as that of the solution from which the deposit is to be made. When a deposit of tin is required, the anode is to be formed of a mixture of one part of nickel or of zinc to 40 parts of tin. The patentee adds to each gallon of the metallic solution used for deposition a

quarter of an ounce by measure of cyanic acid, of ordinary commercial strength. The battery employed for alloys is that of Smee. In order to obtain cylinders of platinized silver, the patentee uses gutta-percha tubing, which he covers and lines outside and inside with platinized silver; a larger battery surface is thus obtained than that afforded by the usual form of plates.

For deposits of single metals, the patentee uses Daniell's battery, charged with equal parts of pure nitric and sulphuric acids, of which a battery of great intensity and sustaining power is obtained. Another part of the patentee's invention relates to the application of glass or porcelain for coating or lining metals or metallic articles, this lining or coating being made to adhere to the metal by means of a siliceous compound, more readily fusible than the glass or porcelain employed. The patentee then gives the following directions for the preparation of a suitable compound or flux for this purpose:—Flint glass in powder 50 parts, calcined borax 25 parts, red lead 15 parts. These ingredients are intimately mixed together and melted. The compound thus obtained is reduced to fine powder, and applied to the surface of the metal to be coated. The metal thus coated with the flux is next heated to the requisite temperature to cause the fusion of the flux, and the glass or porcelain required being added, becomes firmly secured to the metal through the intervention of the flux.

William Stones, of Queenhithe, in the city of London, stationer, for improvements in the manufacture of safety paper for bankers' cheques, bills of exchange, and other like purposes. Date of patent, February 24. Date of enrolment August 24.

The patentee's improvement in this manufacture of paper to be used for cheques, bills, &c., relates to a process of combining certain substances with the pulp, or material of which it is made, the object of which is to discolour the paper, and thus render visible any attempt made to remove the ink from the document for the purposes of falsification. To effect this object, the patentee combines with the material of which the paper is manufactured a mixture composed of iodine or bromine, in combination with ferrocyanide of potassium and starch.

This mixture may be added to the materials at various stages of the manufacture; but the patentee prefers that the starch should be added whilst the materials are being pulped in the machine, and the iodine or bromine, and ferrocyanide of potassium, at a subsequent period of the process. The proportions recommended are one ounce of iodine or bromine, combined with a quarter of an ounce of ferrocyanide of potassium, for the material calculated to produce a ream of paper of 18 pounds weight. This mixture is introduced in a state of solution in water at the stage before mentioned, one pound of starch having been previously mixed with the quantity of pulp required for the manufacture of a ream of paper. The manufacture of the paper is conducted in the ordinary manner, and, when made, the paper will present no difference in appearance to that of ordinary paper; if, however, any attempt be made to remove the ink which has been written on this paper, the acid employed will decompose the ferrocyanide with the formation of prussian blue, if iron be present in the ink used for writing the cheques, bills, &c. If there be no iron in the ink, the discoloration will be of a yellow colour. The patentee does not confine himself to the exact mode of proceeding described, as the process may be varied, but he claims the application and use of iodine and bromine, combined with a base of ferrocyanide or ferrocyanide of potassium, and of starch, as all herein set forth.

John Hinks, of Birmingham, manufacturer, and James Vero, of Burbage, in the county of Leicester, manufacturer, for certain improvements in the manufacture of hats, caps, bonnets, and other coverings for the head. Date of patent, February 24. Date of enrolment, August 24.

That part of the specification which comes more particularly within our province is the first part, which has reference to waterproofing hats, &c. &c. The patentees' first

improvement relates to the use of a mixture of gutta percha with the "Macintosh paste" (Indiarubber dissolved in turpentine, &c.), instead of the latter substance alone. The addition of gutta percha diminishes the elasticity of the article coated with the compound preparation. The proportions of gutta percha employed may be varied according as the quality of elasticity may be more or less dispensed with, and cheapness becomes an object. The solution is applied in the usual way.

Another improvement consists in waterproofing japanned or painted felt hats, by the application of a composition to the felt, previous to japanning or varnishing the hat. This composition does not effect the flexibility of the article so treated. The ingredients are as follows:—8 pounds of whitening, or carbonate of lime, are made into a paste with 2 quarts of hot water; half a pound of lamp-black, previously mixed with half a pint of turpentine, is then added, and when the whole has been well mixed by stirring, one quart of boiled oil is then added, together with 2 quarts of solution of caoutchouc in oil of turpentine (about the consistence of cream). The caoutchouc solution is added gradually, and the whole well stirred at each addition, to ensure a complete admixture of all the ingredients used. This composition is applied in the usual way by means of a brush, the hat being placed on a block, then dried in a stove in the ordinary manner. By the substitution of colouring substances of various kinds for the lamp-black, waterproof compositions of any required colour may be obtained.

The specifications of the undermentioned chemical patents were not enrolled when due:—

Charles William Tupper, of Oxford-terrace, in the county of Middlesex, gent., and Alphonse René le Mire, de Normandy, of Dalston, in the same county, gent., for improvements in the manufacture of iron, coated with other metal, commonly called galvanized iron. Date of patent, February 12. Enrolment due, August 12.

Isaac Lowthian Bell, of Washington Chemical Works, near Newcastle-upon-Tyne, chemical manufacturer, for improvements in the manufacture of sulphuric acid. Date of patent, February 24. Enrolment due, August 24.

Hugh Lee Pattinson, of Scots-house, Gateshead, manufacturing chemist, for improvements in the manufacture of Pattinson's oxichloride of lead. Date of patent, February 18. Enrolment due, August 18.

GOOSEBERRY WINE.—To a peck of green gooseberries scarcely ripened, add 10 quarts of cold water. Digest for 48 hours, then add a pound of lump sugar to every quart of the strained liquor. Let the sweetened liquor be put into a cask, and it will ferment sufficiently without yeast. If any large quantity is made, it may stand a year without being bottled.

CHERRY BRANDY.—Cherries, 3 lb.; sugar, 1½ lb.; brandy, 1 pt.

MILK PUNCH.—Lemons, 1 doz.; rum, 1 qt. Macerate for three days. Water, 5 qts.; rum, 3 qts.; sugar, 3 lbs.; 6 eggs. Beat up with 2 qts. milk.

DECOCT. ALOES CO.—Ext. glycerh, 7 oz., subc. potass, 1 oz.; p. aloes, 1½ oz.; myrrh, 1½ oz.; croci. stig. 1 oz.; aq. destil, 1½ gal.

SYRUP OF LEMONS.—Fresh lemon juice, 6 oz.; boiling water, 2 lbs.; sugar, 4 lbs.; essential oil of lemon, 1 oz.

ESSENCE OF IPECACUANHA (LOCKYER'S).—Rad. ipecac., 3 lias.; aqua, 3 xix.; s. v. r., 3 vj.; ext. papav. a., 3 ij.; 3 vj. in bottle, with stamp, 1s. 1½d.

CONF. AMYGD.—Amygd. dull., 8 oz.; sacch. alb., 4 oz.; P. acacie, 1 oz.

COPYING INK.—Sulphate of iron, ½ lb.; galls, 1 lb; beer, 1 gal.; infused for a fortnight.

SCOTT'S LIQUID BLUE.—Best indigo, 3 ij.; sulphuric acid, 1 oz (fluid). Digest for 24 hours; then add water, 1½ pt.

COMP. SP. OF AMMONIA.—Muriate of ammonia, 7 lbs.; (sub.) carb. of potass, 14 lbs.; spirit, 36 lbs.; ess. bergam., 4 lbs.; oil of nutmeg, ½ oz. Water sufficient to keep the whole moist. Add liq. ammon. fort., 3 lbs.

PRICE CURRENT OF DRUGS, &c.

Articles having bd. or bond annexed are sold at short price exclusive of duty; when no duty is affixed the article is free. Add 5 per cent. to the duty on all articles excepting those having an asterisk prefixed. F. means foreign; B.P. British possessions.

DRUGS, &c.		Price.		
		£. s. d.	£. s. d.	
ALKANET ROOT ..	..cwt.	1 14 6	2 10 0	
ALOE, Barbadoes ..	..	1 10 0	6 0 0	
Hepatica ..	..	1 10 0	5 0 0	
Cape ..	..	1 5 0	1 15 0	
ALUM, British ..	..ton	7 10 0	8 5 0	
Boch ..	..cwt.	1 0 0	1 4 0	
AMBERGRIS, Grey ..	..oz.	4 8 0	18 0	F. 2d. per lb.
ANCHOVIES ..	..dble, bri.	17 0 0	18 0	
ANGELICA ROOT ..	..cwt.	1 0 0	1 5 0	
ANNATTO, Flag ..	..lb.	1 0 0	1 2 0	
Roll ..	..	0 10 0	1 0 0	
ANTIMONY, Crude ..	..cwt.	1 8 0	0 0 0	
Ore ..	..ton.	12 0 0	0 0 0	
Regulus Cps. ..	..cwt.	2 4 0	3 0 0	
Bowls ..	..	2 15 0	2 13 0	
ARROW ROOT ..	..lb.	0 3 0	1 0 0	B. P. 6d. F. 2s.
ARSENIO, White ..	..cwt.	17 0 0	18 0	
Red ..	..	0 0 0	1 0 0	
English White ..	..	12 6 0	1 0 0	
Yellow ..	..	19 0 0	1 0 0	
ARGOL, Bologna ..	..cwt.	2 0 0	2 12 0	
Florence White ..	..	2 0 0	2 4 0	
Red ..	..	3 0 0	2 5 0	
Naples White ..	..	1 18 0	2 5 0	
Red ..	..	1 12 0	1 13 0	
Sidly White ..	..	1 8 0	1 16 0	
Red ..	..	1 8 0	1 10 0	
French ..	..	1 14 0	2 7 0	
Cape ..	..	1 15 0	2 11 0	
ASPHALTUM, Egyptian ..	..	2 10 0	4 15 0	
BORACIO ACID ..	..cwt.	2 12 0	2 13 0	
BALSAM, Canada ..	..lb.	0 24 0	1 0 0	
Capavi ..	..	0 10 0	1 2 0	
Peru ..	..	5 6 0	6 0 0	
Tolu ..	..	3 6 0	4 0 0	
BARILLA, Spanish ..	..ton	0 0 0	0 0 0	
Teneriffe ..	..	0 0 0	0 0 0	
Sicily ..	..	0 0 0	0 0 0	
East India ..	..	0 0 0	0 0 0	
BARK, Peruvian, pale ..	..lb.	1 5 0	2 6 0	
Good ..	..	0 0 0	2 0 0	
Mid., do. ..	..	1 1 0	1 2 0	
Crown ..	..	1 3 0	2 2 0	
Yellow, Flat ..	..	3 0 0	4 6 0	
Quill ..	..	2 0 0	6 5 0	
Red, Flat ..	..	7 0 0	0 0 0	
Quill ..	..	3 0 0	4 6 0	
Cascarilla ..	..cwt.	1 0 0	1 15 0	
Quercitron ..	..	8 6 0	9 6 0	
Oak, English, ... per load ..	..	13 0 0	14 0 0	
Foreign ... per ton ..	..	3 0 0	6 5 0	
New S. W. ..	..	5 0 0	8 0 0	
BERRIES, Bay ..	..cwt.	19 6 0	1 6 0	
Juniper, Italian ..	..	7 6 0	8 0 0	
German ..	..	8 0 0	12 0	
Turkey, Yellow ..	..	3 15 0	6 0 0	
Persian, do. ..	..	8 0 0	14 0 0	
BLACK LEAD, E. I. ..	..cwt.	5 0 0	16 0	
Malaga ..	..	10 0 0	1 5 0	
German ..	..	1 0 0	1 3 0	
Dust ..	..	9 0 0	12 0	
BORAX OR TINCAL ..	..cwt.	2 0 0	0 0 0	
E. I. Refined ..	..	2 17 0	2 18 0	
English Refined ..	..	3 10 0	3 12 0	
BRIMSTONE, Rough ..	..ton	7 10 0	8 0 0	
Roll ..	..	12 0 0	0 0 0	
CAMPHOR, Unrefined ..	..cwt.	3 7 6	3 10 0	
Dutch ..	..	3 10 0	0 0 0	
* Refined ..	..lb.	1 0 0	1 1 0	5s. per cwt.
CANTHARIDES, bd. ..	..	3 0 0	3 6 0	3d. per lb.
CAPERS, French ..	..cwt.	7 0 0	12 0 0	6d. ..
Capotts ..	..	6 0 0	7 10 0	3d. .. B.P.
CARDAMOMS, Malabar ..	..lb.	2 9 0	3 0 0	
Long Longe ..	..	3 0 0	3 4 0	
Ceylon ..	..	1 3 0	1 54 0	
CASTOR OIL, America ..	..lb.	0 23 0	0 0 0	
E. I., bd. ..	..	0 23 0	0 43 0	
CHILIES, E. I. ..	..cwt.	15 6 0	1 5 0	6d. per lb.
CHINA ROOT ..	..cwt.	10 0 0	1 0 6	
COCHINEAL, Honduras Black ..	..lb.	3 7 0	4 10 0	
Silver ..	..	3 0 0	3 11 0	
Mexican Black ..	..	3 4 0	3 9 0	
Silver ..	..	3 0 0	3 3 0	
COBALT ..	..lb.	0 0 0	0 0 0	
COCULUS INDICUS ..	..cwt.	1 0 0	1 7 0	

DRUGS, &c., continued.		Price.		
		£. s. d.	£. s. d.	
COFFEE, Jamaica, triage and ord.	..	1 13 0	1 18 0	{ B.P. 4d. F. 6d. per lb.
good and fine ord.	..	2 0 0	2 6 0	
low to good middling	..	2 8 0	3 10 0	
fine middling & fine	..	3 12 0	4 10 0	
Demerara, triage & ord.	..	0 0 0	0 0 0	
good and fine ord.	..	0 0 0	0 0 0	
low to good mid.	..	0 0 0	0 0 0	
Berbice, triage and ord.	..	0 0 0	0 0 0	
good and fine ord.	..	0 0 0	0 0 0	
low to fine middling	..	0 0 0	0 0 0	
Dominica and St. Lucia, triage and ordinary	..	0 0 0	0 0 0	
good and fine ord.	..	0 0 0	0 0 0	
low to good middling	..	0 0 0	0 0 0	
Ceylon, ordinary to very good ord. native	..	1 18 0	1 19 0	
fine ord. to mid. pla.	..	2 4 0	2 14 0	
good mid. to fine de.	..	2 16 0	3 15 0	
Mocha, ord. & ungarbled	..	2 0 0	2 10 0	
clean garbled ..	..	3 4 0	3 15 0	
fine ..	..	3 16 0	4 8 0	
Sumatra, Padang, &c. ..	..	1 17 0	2 0 0	
Java ..	..	2 4 0	3 0 0	
Mysore with certificate	..	1 19 0	2 10 0	
Brasil, ord. to fine ord.	..	1 18 0	1 18 0	
ex. fine plant. kind	..	2 0 0	2 15 0	
St. Domingo ..	..	1 17 0	1 19 0	
Havannah, ord. to good.	..	1 18 0	2 0 0	
fine ord. to mid.	..	2 3 0	2 10 0	
Cuba, ord. to good ord.	..	1 18 0	2 2 0	
fine ord. to middling	..	2 4 0	2 15 0	
Porto Rico ..	..	1 18 0	2 10 0	
La Guayra ..	..	1 18 0	2 12 0	
Costa Rica ..	..	2 0 0	2 12 0	
COCOA, Trinidad, red ..	..	2 3 0	3 14 0	{ B.P. 1d. F. 2d. per lb.
grey ..	..	1 18 0	2 3 0	
Grenada ..	..	1 15 0	2 3 0	
Para, St. Domingo, and Bahie	..	1 7 0	1 9 0	
Guayaquil ..	..	1 10 6	1 11 0	
COLOCYNTH, Turkey ..	..lb.	0 6 0	1 9 0	
Spanish ..	..	0 11 0	1 6 0	
COLOMBO ROOT ..	..	2 16 0	2 19 0	
COFFERAS, Green, be. ..	..ton	1 10 0	2 15 0	
Blue ..	..	1 8 0	1 10 0	
CREAM TARTAR, French ..	..	2 18 0	2 8 0	
Venetian ..	..	2 5 0	2 8 0	
CUBERS ..	..cwt.	4 0 0	5 0 0	
CUTCH ..	..	1 0 0	1 0 6	
DRAGON'S BLOOD ..	..lump	3 10 0	9 15 0	
Reed ..	..	8 0 0	14 10 0	
DIYEWOODS:				
Brasil ..	..ton	45 0 0	80 6 0	
Barwood, Angola ..	..	0 0 0	0 0 0	
Camwood ..	..	13 15 0	28 15 0	
Fustic, Brazil ..	..	0 0 0	0 0 0	
Cuba ..	..	8 10 0	9 0 0	
Jamaica ..	..	5 0 0	5 10 0	
Spanish ..	..	4 0 0	4 10 0	
Zante ..	..	0 0 0	0 0 0	
Logwood, Campeachy ..	..	6 10 0	6 15 0	
Honduras ..	..	5 0 0	5 10 0	
Jamaica ..	..	3 10 0	4 0 0	
St. Domingo ..	..	4 0 0	5 0 0	
Nicaragua, Lima ..	..	14 0 0	15 0 0	
solid ..	..	12 0 0	17 0 0	
small and mid.	..	6 10 0	12 0 0	
Red Sanders ..	..ton	4 15 0	5 15 0	
* ESSENTIAL OILS ..				
Cloves, bd. ..	..lb.	2 8 0	5 4 0	s. per lb.
Caraway ..	..	6 3 0	5 4 0	
Lavender ..	..	3 6 0	7 0 0	
Peppermint, bd. ..	..	4 0 0	11 0 0	
Spike ..	..	4 0 0	0 0 0	
Aniseed, bd. ..	..lb.	5 5 0	6 6 0	
Cassia, bd. ..	..	9 6 0	10 0 0	
Cayaput, bd. ..	..oz.	0 33 0	0 44 0	
Cinnamon, bd. ..	..	0 10 0	2 6 0	
Mace (expd.), bd. ..	..	0 3 0	0 54 0	
Nutmeg, bd. ..	..	0 41 0	0 56 0	1s. per lb.
Bergamot ..	..lb.	9 0 0	9 9 0	
Lemon ..	..	8 6 0	8 9 0	
Orange ..	..	8 9 0	7 0 0	
Rosemary ..	..	1 8 0	2 6 0	
Thyme ..	..	3 9 0	3 0 0	
Otto Roses ..	..oz.	13 6 0	1 0 0	
Almonds ..	..lb.	1 5 0	0 0 0	
GALANGAL ROOT, bd. ..	..cwt.	14 0 0	1 4 0	
GALLS, sorta ..	..cwt.	4 0 0	4 10 0	
Green or White ..	..	2 15 0	3 10 0	
Blue ..	..	4 12 0	5 0 0	
E. I. Blue ..	..bd.	3 10 0	5 0 0	
GENTIAN ROOT ..	..cwt.	1 1 0	1 8 0	
GLUE, Best Town ..	..cwt.	1 5 0	1 0 0	
Interior ..	..	0 0 0	0 0 0	
Foreign ..	..	1 10 0	2 6 0	
GUINNA GRAINS, bd. ..	..	2 5 0	0 0 0	15s. per cwt.

DRUGS, &c., continued.

	£. s. d.	Price.	£. s. d.
GUTTA PERCHA .. lb.	0 10 @	1 0	
GUMS:			
Ammoniac, Lp. .. cwt.	9 6 @	1 10 0	
Drop ..	1 15 0 @	3 15 0	
Arabic, E. I. ..	1 0 0 @	4 13 0	
Cape ..	13 0 0 @	1 3 0	
Turkey, fine ..	8 10 0 @	10 0 0	
Snds and Snds ..	3 5 0 @	6 0 0	
Australian ..	1 17 0 @	2 0 0	
Barbary, Brown ..	1 15 0 @	2 10 0	
White ..	3 5 0 @	2 15 0	
Gedda ..	5 0 0 @	6 0 0	
ANIMI, washed ..	3 0 0 @	11 10 0	
scraped ..	6 0 0 @	12 0 0	
Copal .. lb.	0 6 @	2 8	
ASAFOETIDA .. cwt.	10 0 0 @	4 10 0	
BENJAMIN, Snds ..	4 0 0 @	9 10 0	
1st and Snds ..	10 0 0 @	35 0 0	
DAMMAR ..	1 10 0 @	1 18 0	
GAMBOGE ..	5 0 0 @	11 10 0	
GALBANUM ..	2 10 0 @	3 0 0	
GUAIACUM .. lb.	0 6 @	1 0	
MYRRH, E. I. .. cwt.	2 0 0 @	10 0 0	
MASTIC .. lb.	3 0 @	6 6	
OLIBANUM .. cwt.	10 0 @	2 14 6	
SANDRACH ..	2 6 0 @	3 10 0	
SENEGAL, garbled ..	3 0 0 @	4 10 0	
TRAGACANTH, Picked ..	13 0 0 @	16 0 0	
Sorts ..	4 6 0 @	10 0 0	
LAC, Sticklac, Bengal ..	17 8 @	1 15 0	
Siam, &c. ..	2 10 0 @	3 8 0	
Shellac, Liver .. cwt.	2 2 0 @	2 5 0	
Ruby ..	2 5 0 @	2 10 0	
Orange ..	2 5 0 @	2 18 0	
Block ..	1 1 0 @	3 5 0	
Blood ..	3 0 0 @	2 8 0	
Seedlac .. cwt.	1 0 0 @	2 0 0	
HELLBORN ROOT .. cwt.	1 18 0 @	0 0 0	
HONEY, Fine ..	1 8 0 @	3 0 0	
ISLAND MOSS .. lb.	0 2 @	0 3	
INDIA RUBBER, solid ..	1 8 0 @	0 9	
bottles ..	1 0 @	1 8	
small ..	1 9 @	2 6	
INDIGO .. florae .. lb.	4 2 @	4 7	
Bengal, fine blue ..	6 0 @	6 4	
good and fine violet and purple ..	5 6 @	5 9	
ordinary and middling ..	4 7 @	5 0	
good and fine copper ..	5 4 @	5 8	
ordinary and middling ..	3 9 @	5 0	
Consumers, good and fine ..	4 8 @	5 2	
ordinary and middling ..	3 9 @	4 6	
Java, good and fine ..	4 3 @	6 8	
Oude, good and fine ..	3 3 @	4 6	
ordinary and middling ..	2 2 @	3 2	
Madras, good and fine ..	3 1 @	4 3	
ordinary and middling ..	1 9 @	3 0	
Kurpah, good and fine ..	3 6 @	5 6	
ordinary and middling ..	2 0 @	3 5	
Manilla good and fine ..		Withdrawn.	
ordinary and middling ..			
IPROCAUANHA .. lb.	5 0 @	5 6	
ISINGLASS LEAF, 1st sort ..	10 0 @	13 6	
2nd sort ..	9 0 @	10 0	
Simovia ..	2 0 @	2 9	
Siberia Furze ..	5 0 @	6 0	
Short Staple, 1st ..	8 0 @	14 0	
Long ditto ..	10 0 @	14 0	
ISINGLASS, Brazil ..	0 6 @	5 6	
JALAP .. lb.	1 4 @	2 2	
JUICE OF LEMON .. gal.	0 10 @	1 0	
LAC DYE, Fine .. lb.	1 8 @	2 4	
Good ..	1 2 @	1 5	
Middling ..	1 0 @	1 2	
Ordinary ..	0 5 @	0 11	
Lake ..	0 3 @	0 8	
QUORION Paste, Ital. .. cwt.	3 5 0 @	3 12 6	
Block ..	4 0 9 @	5 15 0	
ADDERS, Dutch Crop .. cwt.	2 6 0 @	2 10 0	
Ombro ..	2 2 0 @	2 5 0	
Gamene ..	1 5 0 @	1 10 0	
Mull ..	8 0 @	12 6	
French ..	0 0 @	0 0	
Spanish ..	1 10 0 @	2 0 0	
MADDER ROOTS, Turkey ..	1 6 0 @	1 10 0	
MAGNESIA, English ..	2 0 0 @	2 2 0	
MANNA, Flakey .. lb.	3 0 @	3 6	
Sleety ..	1 0 @	1 6	
MUNJEE, E. I. .. cwt.	18 0 @	1 2 0	
METALS:			
IRON BRT. Cakes .. ton	84 0 0 @	0 0	
Tile ..	83 0 0 @	0 0	
Sheets .. lb.	0 94 @	0 0	
Bottoms ..	0 10 @	0 0	
Old ..	0 84 @	0 0	
S. American .. ton	86 0 0 @	0 0	
Foreign Cake ..	0 0 @	0 0	
Foreign Tile ..	0 0 @	0 0	

B.P. 5 F. 10s.

Public Sale Prices.

F 1 0 0 cwt.

BP 10 0 cwt.

per cwt. un-
wrought 4s.
B.P. 8s. 9d. F.
wrought B.P.
5s. F. 10s. old
B.P. 3s. 6d.
old F. 7s. 6d.

DRUGS, &c., continued.

	£. s. d.	Price.	£. s. d.
IRON, British Bars ..	5 2 6 @	5 10 0	
Rods ..	6 5 0 @	6 15 0	
Hoops ..	7 0 0 @	7 10 0	
Sheet ..	7 15 0 @	8 5 0	
Cargo in Wales Bars ..	4 10 0 @	0 0	
Pigs No. 1 Wales ..	3 0 0 @	4 0 0	
No. 1 Clyde ..	1 18 0 @	1 19 0	
Russian C.C.N.D. ..	0 0 @	0 0	
P.S.I. ..	0 0 @	0 0	
Archangel ..	0 0 @	0 0	
Swedish ..	11 10 0 @	12 10 0	
LEAD, British:			
Pigs .. ton	16 15 6 @	0 0	
Sheet milled ..	18 0 0 @	18 5 0	
Shot Pat. ..	19 10 0 @	20 10 0	
Red or Minium ..	18 10 0 @	19 0 0	
White ..	23 0 0 @	25 0 0	
Litharge ..	19 0 0 @	0 0	
Pig Spanish ..	0 0 @	0 0	
American ..	0 0 @	0 0	
STEEL, English ..	0 0 @	0 0	
Swedish Keg ..	14 10 0 @	0 0	
Faggot ..	15 10 0 @	0 0	
TIN, Blocks ..	4 4 0 @	0 0	
Ingots ..	4 10 0 @	0 0	
In Bars ..	4 5 0 @	0 0	
Banca .. bd.	4 1 0 @	0 0	
Straits .. bd.	4 0 0 @	0 0	
Peruvian .. bd.	0 0 @	0 0	
Plates, p. bk. of 25 Sheets:			
No. 1 C 13 1/2 by 10 in. ..	1 5 0 @	1 5 6	
1 X ..	1 13 0 @	1 13 6	
1 XX ..	14 7 6 @	0 0	
SPELTER on the spot .. ton	14 5 0 @	0 0	
Delivery ..	21 0 0 @	0 0	
ZINC, English Sheet ..	21 0 0 @	0 0	
PLATINA ORE .. oz.	0 0 @	0 0	
ORISIDE ..	10 0 @	1 5 0	
MUSK, good and fine .. oz.	7 6 @	9 6	
NUX VOMICA, bd. .. cwt.			
OILS—Imperial measure:			
Olive, Florence, 1/2 chest ..	15 0 @	18 0	
Luca, jars ..	5 0 0 @	0 0	
Gallipoli, 252 gals. ..	38 0 0 @	40 0 0	
Spanish, ditto ..	38 0 0 @	39 0 0	
Linseed .. cwt.	1 12 9 @	1 13 0	
Rape, Pale ..	1 12 0 @	0 0	
Brown ..	1 12 0 @	0 0	
Cod ..	37 0 0 @	0 0	
Seal, Pale ..	35 10 0 @	0 0	
Brown, yel., and straw ..	34 0 0 @	34 10 0	
Sperm ..	84 0 0 @	86 0 0	
Head Matter ..	90 0 0 @	0 0	
Whale, Greenland ..	0 0 @	0 0	
South Sea ..	32 0 0 @	33 0 0	
Cocoa Nut .. cwt.	1 10 0 @	1 14 6	
Palm .. cwt.	27 10 0 @	28 0 0	
OLIVES, French 1/2 bars .. 2 gals	3 0 0 @	4 0 0	
Spanish, keg 2 galls. ..	9 0 @	10 0	
OPIUM, Turkey, bd .. lb.	10 6 @	14 0	
Egyptian ..	7 6 @	8 6	
ORCHILLA, Angola .. ton	35 0 0 @	0 0	
Cape de Verdi ..	25 0 0 @	35 0 0	
Madeira ..	30 0 0 @	0 0	
ORPIMENT, E. India ..	0 0 @	0 0	
ORANGE FLOWER water .. lb.	0 8 @	0 0	
Peel ..	5 0 @	0 0	
ORRIS ROOT .. cwt.	1 18 0 @	2 2 0	
PELLITORY ROOT .. lb.	0 6 @	0 0	
PINK ROOT .. lb.	0 5 @	0 8	
PITCH, British .. cwt.	5 6 @	0 0	
Archangel ..	7 6 @	0 0	
Stockholm ..	12 0 @	0 0	
Burgundy ..	0 0 @	0 0	
PUMICESTONE, sorts .. ton	5 0 0 @	8 0 0	
QUASSIA .. cwt.	8 0 @	12 0	
QUICKSILVER .. lb.	3 4 @	3 6	
RHATANIA ROOT .. lb.	0 5 @	0 8	
RHUBARB, round ..	0 6 @	3 3	
Flat ..	0 8 @	3 3	
Dutch, trimd. ..	2 6 @	3 9	
Russian ..	10 0 @	12 0	
SACCHARUM SATURNI, bd. .. lb.	0 0 @	0 0	
SAFFRON, Spanish .. lb.	1 0 0 @	1 6 0	
*SAGO common .. cwt.	18 0 @	18 6	
Pearl ..	19 0 @	1 4 0	
Sago Flour ..	14 0 @	15 0	
SAL AMMONIAC, E. I. .. cwt.	1 10 0 @	1 13 0	
English, Refined ..	1 18 0 @	0 0	
SALTS, Glauber ..	6 6 @	7 0	
Epsom ..	6 0 @	6 0	
SALF ..	18 15 0 @	14 5 0	
SARSAPARILLA, Brazil .. lb.	0 10 @	1 3	
Honduras ..	0 10 @	1 6	

6 0
0 0B.

10 per cwt.

5 0 p. cwt.

20 2 0 gall.

0 1 0 p. lb.

DRUGS, &c., continued.		Price.	
		£. s. d.	£. s. d.
SARSAPARILLA, Vera Cruz	..	0 4 0	0 5 0
.. Jamaica	..	1 6 0	2 3 0
SASSAPARILLA ROOT .. ton	10 0 0	12 0 0	0 0 0
SAFFLOWER, E. I. .. cwt.	3 10 0	7 10 0	0 0 0
SHUMAO, Malaga .. cwt.	1 0 0	2 0 0	0 0 0
.. Sicily	12 0 0	13 6 0	0 0 0
.. Trieste	14 6 0	15 0 0	0 0 0
SALTPETRE, Rough ..	1 5 0	1 9 6	0 0 0
.. British, Refined	1 9 0	1 9 6	0 0 0
.. Nitrate of Soda	14 6 0	15 0 0	0 0 0
.. British, Refined	0 0 0	0 0 0	0 0 0
SCAMMONY, Smyrna .. lb.	5 0 0	7 0 0	0 0 0
.. Aleppo, Snds	10 0 0	15 0 0	0 0 0
.. fine	1 8 0	1 15 0	0 0 0
SEEDS, Antiseed .. cwt.	2 2 0	2 5 0	0 0 0
.. German	2 2 0	2 5 6	0 0 0
.. E. I. Star	3 5 0	3 10 0	0 0 0
.. Cummin	2 15 0	3 10 0	0 0 0
.. Caraway, Foreign	19 0 0	1 10 0	0 0 0
SENNA, Alexandria .. lb.	0 6 0	1 0 0	0 0 0
.. East India	0 2 0	0 6 0	0 0 0
.. East India	0 1 0	0 5 0	0 0 0
.. Tinnevely	0 8 0	1 4 0	0 0 0
SMELTS, Saxon, FFFE .. lb.	1 2 0	0 0 0	0 0 0
.. Danish, FFFE	1 7 0	0 0 0	0 0 0
.. FFFE	1 3 0	0 0 0	0 0 0
.. FFFE	1 8 0	0 0 0	0 0 0
.. Snake Root	0 4 0	0 8 0	0 0 0
SOAP, Naples, soft ..	1 6 0	1 9 0	0 0 0
.. Castile, hard .. cwt.	3 0 0	0 0 0	0 0 0
.. British, Mottled	2 2 0	2 4 0	0 0 0
.. Yellow	1 18 0	2 2 0	0 0 0
.. White	2 14 0	0 0 0	0 0 0
.. Scented	0 0 0	0 0 0	0 0 0
.. Windsor	0 0 0	0 0 0	0 0 0
.. Oil	0 0 0	0 0 0	0 0 0
.. Soft B. B.	1 0 0	0 0 0	0 0 0
.. B. S.	0 0 0	0 0 0	0 0 0
.. B.	0 0 0	0 0 0	0 0 0
SODA .. ton.	6 10 0	0 0 0	0 0 0
ASHES, Canada Pot lat. cwt.	1 10 0	1 11 0	0 0 0
.. Pearl lat.	1 9 0	0 0 0	0 0 0
.. United States Pot	0 0 0	0 0 0	0 0 0
.. Pearl	0 0 0	0 0 0	0 0 0
SOY, bd. .. gallon	4 0 0	4 4 0	0 0 0
SPICES—			
Cassia Lignea, ord. to mid.	5 10 0	5 12 0	0 0 0
.. good to fine	5 14 0	6 0 0	0 0 0
Cassia Buds	5 12 0	5 15 0	0 0 0
Cinnamon, Ceylon, 1st quality	1 6 0	3 4 0	0 0 0
.. 2d	1 0 0	2 4 0	0 0 0
.. 3d	0 8 0	1 10 0	0 0 0
.. Malabar	0 0 0	0 0 0	0 0 0
.. Tellicherry	0 8 0	1 10 0	0 0 0
Cloves, Amboyna ..	0 8 0	0 10 0	0 0 0
.. Bourbon & Zanzibar	0 5 0	0 6 0	0 0 0
.. Penang	0 10 0	1 2 0	0 0 0
Ginger, Bengal ..	15 0 0	2 18 0	0 0 0
.. Malabar	17 0 0	2 15 0	0 0 0
.. Jamaica	2 5 0	10 0 0	0 0 0
.. Barbadoes	1 10 0	2 7 0	0 0 0
.. Mace	2 0 0	3 9 0	0 0 0
.. Nutmeg, brown	1 4 0	3 0 0	0 0 0
.. lined	0 3 0	0 3 0	0 0 0
Pepper, bd. Malabar, heavy shot	0 3 0	0 3 0	0 0 0
.. light and half heavy	0 3 0	0 3 0	0 0 0
.. Eastern	0 5 0	0 10 0	0 0 0
.. white	0 0 0	0 0 0	0 0 0
.. long	0 0 0	0 5 0	0 0 0
Pimento ..	9 0 0	1 5 0	0 0 0
SPONGE, fine .. lb.	1 0 0	7 6 0	0 0 0
.. ordinary	1 14 0	1 15 6	0 0 0
SPIRITS OF TURPENTINE .. cwt.	11 9 0	12 0 0	0 0 0
SULPHATE OF QUININE .. oz.	0 1 0	0 2 0	0 0 0
SEEDS, dry .. lb.	0 0 0	0 0 0	0 0 0
.. undried	1 4 0	1 5 0	0 0 0
SERMAONTI, English .. lb.	0 0 0	0 0 0	0 0 0
.. American	2 6 0	2 12 0	0 0 0
STARCH, English ..	0 0 0	0 0 0	0 0 0
.. Irish	14 6 0	15 6 0	0 0 0
POTATO FARINA ..	1 18 6	1 18 9	0 0 0
TALLOW: ..	1 18 0	1 18 3	0 0 0
.. Petersburg, new .. cwt.	1 19 0	0 0 0	0 0 0
.. old	1 17 0	0 0 0	0 0 0
.. Delivery last three months	0 0 0	0 0 0	0 0 0
.. South American	0 0 0	0 0 0	0 0 0
.. Odessa Sheep	0 0 0	0 0 0	0 0 0
.. North American	0 0 0	0 0 0	0 0 0
.. Australian	1 15 0	1 17 0	0 0 0
.. Town Tallow .. cwt.	1 19 6	0 0 0	0 0 0
.. Fat by ditto	2 1 0	0 0 0	0 0 0
.. Russian Candle	1 19 6	0 0 0	0 0 0
.. Melted Staff	1 8 0	0 0 0	0 0 0
.. Rough ditto	18 0 0	0 0 0	0 0 0

DRUGS, &c., continued.		Price.	
		£. s. d.	£. s. d.
TALLOW:			
Graves ..	9 0 0	0 0 0	0 0 0
Good Drugs ..	6 0 0	0 0 0	0 0 0
PRICES OF CANDLES, per doz.:			
Mould Candles ..	6 0 0	7 0 0	0 0 0
Store ditto ..	4 6 0	5 6 0	0 0 0
TAMARINDS, West Ind. .. cwt.	1 10 0	2 10 0	0 0 0
.. East Ind., bd.	13 0 0	16 0 0	0 0 0
*TAPIOCA .. lb.	0 1 0	0 4 0	0 0 0
TEA: bd.			
Bohea, Canton, & Waping	0 6 0	0 7 0	0 0 0
.. Fokien	0 0 0	0 0 0	0 0 0
Comgou, ordinary and out	0 9 0	0 9 0	0 0 0
.. of condition	0 10 0	0 10 0	0 0 0
.. good ordinary	0 10 0	0 10 0	0 0 0
.. mixed blackish leaf	0 11 0	0 11 0	0 0 0
.. rather blackish leaf	0 11 0	0 11 0	0 0 0
.. blackish leaf	0 11 0	1 0 0	0 0 0
.. ditto rather strong	1 0 0	1 1 0	0 0 0
.. strong	1 1 0	1 6 0	0 0 0
.. Pekoe klad and flavour	0 11 0	1 6 0	0 0 0
.. Ning Yung, fair to fine	0 9 0	1 0 0	0 0 0
.. Pouchong	0 0 0	0 0 0	0 0 0
.. Capar, chests	0 11 0	1 6 0	0 0 0
.. do. in 10 lb. Catty boxes	0 0 0	0 0 0	0 0 0
.. Campol, common	0 0 0	0 0 0	0 0 0
.. good to fine	0 0 0	0 0 0	0 0 0
.. Souchong, ordinary to good	0 9 0	1 2 0	0 0 0
.. fine	1 4 0	2 0 0	0 0 0
.. Flowery Pekoe, flat	1 0 0	1 3 0	0 0 0
.. fair to fine	1 6 0	2 3 0	0 0 0
.. very fine and flowery	2 4 0	3 0 0	0 0 0
.. Black leaf Pekoe or Hong			
.. Muey	0 10 0	1 4 0	0 0 0
.. Orange Pekoe, faint & odd	0 11 0	0 12 0	0 0 0
.. common to fine plain	1 0 0	1 1 0	0 0 0
.. common to fine scented	1 1 0	1 9 0	0 0 0
.. Twankay, common	0 10 0	0 11 0	0 0 0
.. good	1 0 0	1 1 0	0 0 0
.. fine to Hyson kind	1 2 0	1 3 0	0 0 0
.. Hyson Skin, common	0 10 0	0 11 0	0 0 0
.. good to fine	1 0 0	1 2 0	0 0 0
.. Hyson, common	1 1 0	1 3 0	0 0 0
.. fair to good	1 4 0	1 10 0	0 0 0
.. fine	2 0 0	2 6 0	0 0 0
.. extra fine	2 10 0	3 10 0	0 0 0
.. Young Hyson, common	0 8 0	1 1 0	0 0 0
.. good to fine	1 2 0	2 7 0	0 0 0
.. Imperial, common	1 2 0	1 4 0	0 0 0
.. good to fine	1 5 0	2 6 0	0 0 0
.. Gunpowder, common	0 8 0	1 7 0	0 0 0
.. good to fine	1 9 0	4 0 0	0 0 0
TURMERIC, Bengal .. cwt.	16 0 0	17 0 0	0 0 0
.. Java	10 0 0	13 0 0	0 0 0
.. Madras	10 0 0	14 6 0	0 0 0
TERRA JAPONICA .. cwt.	14 6 0	0 0 0	0 0 0
.. Sienna	1 2 0	1 4 0	0 0 0
VALONIA, Smyrna .. ton	16 0 0	17 0 0	0 0 0
.. Picked Morea	13 0 0	14 0 0	0 0 0
VANILLAS, Brazil .. lb.	10 0 0	2 12 0	0 0 0
.. Vera Cruz	1 5 0	1 10 0	0 0 0
VERDIGRIS, Foreign ..	0 9 0	0 10 0	0 0 0
.. English	1 3 0	0 0 0	0 0 0
VERMILION, China .. lb.	4 0 0	4 2 0	0 0 0
.. English	5 0 0	0 0 0	0 0 0
VITRIOL, blue ..	1 8 0	1 10 0	0 0 0
.. Foreign, white	14 0 0	0 0 0	0 0 0
.. English, ditto	1 4 0	1 5 0	0 0 0
.. Oil of	0 1 0	0 9 0	0 0 0
WAX, Mogadore .. cwt.	5 17 6	6 10 9	0 0 0
.. American	5 5 0	0 0 0	0 0 0
.. Russian	7 10 0	0 0 0	0 0 0
.. Hambro'	7 12 6	8 0 0	0 0 0
.. East India	5 10 0	9 0 0	0 0 0
.. African	5 0 0	7 0 0	0 0 0
.. White Hambro'	7 0 0	8 10 0	0 0 0
.. English	2 0 0	9 15 0	0 0 0
.. Cape	5 15 0	6 15 0	0 0 0
.. West India	0 0 0	7 0 0	0 0 0
WELD ..	0 0 0	0 0 0	0 0 0
WOAD .. ton	0 0 0	0 0 0	0 0 0
WOOD, Sapan Bimas	1 0 0	1 15 0	0 0 0
.. Siam	8 0 0	1 0 0	0 0 0

DOCTORING FOR PUBLIC-HOUSE BEER.—1 lb. grains of Paradise, 1 lb. cocculus indicus, 1 lb. chili pods, 2 lbs. salt prunella, 1 oz. Turkey opium; water (*ditto* water will do) 2 gallons. Reduce by boiling to 6 quarts. Use a pint of the liquor for 36 gallons, and yourselves be the only drinkers of such "Tom-and-Jerry ale."

LUCIFER MATCHES.—Chlorate of potass, 1 oz.; red oker, 2 drachms; rosin, 1 oz.; plaster of Paris, 1 1/2 oz.; phosphorus, 1/2 oz.

IMPORTS OF DRUGS, &c., INTO LONDON DURING THE WEEK ENDING WEDNESDAY, AUGUST 27.

THURSDAY, August 21.—In the Albion, from Rotterdam.
2562 bars iron.

863 bars iron. In the Agus, from Rotterdam.

60 barrels zinc. In the Baron Osy, from Antwerp.

FRIDAY, August 22.—In the Eglantine, from Quebec.
119 brs. iron, 717 bds. steel.

125 tons, 468 bags memosa bark, 3 bls. vanils, 2 pkgs. beeswax. In the Winchester, from Launceston.

In the Lutchini, from Sonapore and Madras.

2880 pcs. redwood, 128 chts. indigo, 10 bgs. cardamoms. In the Magnet, from Amsterdam.

691 slabs tin, 135 bgs. caraway seeds.

SATURDAY, Aug. 23.—In the Pioneer, from Calcutta.

50 hhds. rapeseed oil, 44 hhd. 325 cs. castor oil, 4 bts. 8 cs. tallow, 21 hhds. vegetable oil, 750 bgs. linseed, 2378 sks. 832 bags rapeseed.

In the Blanche, from Cadiz.

1 ble. olives, 12 bxs. liquorice, 430 pcs. lead. In the Emerald, from Gibraltar.

50 tons antimony ore. In the Emiliano, from Bilbao.

227 bds. iron. In the Alfred, from Malaga.

3 cs. shot, 10 pigs lead, 56 bls. ore. In the Marion, from Calcutta and St. Helena.

188 bgs. horn shavings, 1548 sks. 486 bgs. rapeseed, 640 bgs. 2089 pkts. linseed, 100 chts. lac dye, 134 cs. castor oil, 457 chts. indigo, 259 chts. shellac. In the Warlington, from Gothenburg.

500 kegs steel. In the Jorleson, from Sierra Leone.

1102 pkgs. ginger, 1 cs. cayenne pepper, 1634 billets camwood. In the Royal Albert, from Calcutta.

1243 bags saltpetre, 600 pkts. rapeseed, 936 chts. indigo, 520 chts. shellac, 1000 pkts. oil seed. In the Flectra, from Ghent.

23 cks. rape oil. In the Vigilant, from Hobart Town.

8 tons memosa bark, 726 bgs. 17 tons bark. In the Gustave, from Bayonne.

174 cks. turpentine. In the Atala, from Bahia.

8010 bds. piassava, 2 tins vanillas. In the William Hyde, from Adelaide and Auckland.

143 tons copper ore, 9 bxs. karri gum. In the Gemini, from Calcutta.

1400 bgs. 1000 pkts. linseed, 500 pkts. rape seed, 662 cs. castor oil, 58 chts. shellac, 48 chts. lac dye. In the Joseph Somes, from Colombo.

585 bgs. plumbago, a qnty. sapan wood, 43 pps., 90 hhds. cocoa nut oil, 50 cs. ginger, 38 bls. cinnamon, 9 cks. madder root. In the Larkins, from Calicut, Bombay, Mangalore, and Tellicherry.

1200 bgs. myrabolanes, 51 cs. stick lac, 5 bxs. beeswax, 166 bgs. linseed, 50 cs. gum arabic, 150 cs. gum oribanum, 3 cs. gum animi, 472 saltpetre. In the Atlantic Ocean, from Jamaica.

115 bgs. ginger, 2 tons fustia, 16 bgs. pimento, 2 kegs. succades.

MONDAY, August 25.—In the Fortitude, from Bussorah.

21 hf. bgs. galla. In the Thetis, from Gothenburg.

1352 bars iron. In the Soho, from Antwerp.

23 cks. 25 cs. spelter.

In the Queenstown, from Launceston and Adelaide.

178 bgs. 55 tons. 17 c. bark, 1738 bgs. copper ore, 209 bgs. lead ore. In the Apollo, from Rotterdam.

27 cks. barytes. In the John Graham, from Smyrna and Reinkiel.

25 cs. 4 bls. sponge, 95 tons valonia. In the La Siloreuse, from Catania.

300 tons brimstone. In the Lion, from Harlingen.

10 cks. rape oil. In the Ursula, from Manilla.

12,961 cks. copper, 29 tons sapan wood.

TUESDAY, August 26.—In the Glenelg, from Bombay.

8 cs. essential oil, 217s. cs. 1661 chts. 38 pkgs. olibanum, 186 chts. 50 cs. ginger, 997 pkgs. 1532 bags linseed, 1547 bags pepper, 51 bags nux vomica, a qnty. sapan wood, 866 bgs. galla, 75 cs. gum, 59 cs. castor oil, 620 bgs. 616 pkgs. seed, 37 cs. shellac, 7 chts. gum arabic, 2 cs. vermilion.

In the Mysore, from Columbo and Point de Galle.

80 brls. 30 cks. plumbago. In the Nonpareil, from Cronstadt.

61 cks. tallow. In the Gambia, from Sierra Leone.

8 tons camwood, 9 cs. gum, 315 bgs. ginger. In the Deborah, from Rouen.

12 cks. alum. In the Champion, from Hernosand.

3288 bars iron. In the Maitland, from Port Philip.

1144 cks. tallow. In the Mary Sophia, from Istapa and Acajutta.

WEDNESDAY, Aug. 27.—In the Mary Sophia, from Istapa and Acajutta.

2686 jars. cochineal, 180 jars balsam, 27 bls. sarsaparilla. In the Rifleman, from Singapore.

1703 bgs. blk. pepper, a qnty. sapan wood. In the Elizabeth Beynon, from Copiapo.

5375 bags silver ore. In the Norfolk Tar, from Oporto.

13 cks. cream tartar. In the Hippogrif, from Gothenburg.

1537 bars iron.

In the important subject of medico-legal examinations, sufficient attention is not usually paid to the preliminary scrutiny of the vessels employed. In reference to this subject, M. Flandin makes the following pertinent remarks:—"We cannot be too severe in the choice of vessels and apparatus employed in the researches of toxicology, and still more so in the choice of reagents.

"In researches connected with the subject of metallic poisons, we must take care not to employ vessels of cast iron, which have more than once been productive of mistakes even in experienced hands. Such utensils indeed almost always contain in small proportions various toxic metals, amongst which may be enumerated tin, copper, arsenic, and lead.

"Suppose, now, the operation of incineration or calcination of organic matters to be performed in a vessel containing impurities such as those mentioned; at the respective evaporative temperatures of each, the metals in question will be sublimed from the cast iron, will assume the free condition, and will mix with the product on which an experiment is being made. At the end of the operation, a strange poison then may possibly find its way into matters where it otherwise would not have been.

"Hessian crucibles are scarcely better adapted than iron ones for the conducting of the aforesaid operations. The clay of which they are made is generally very impure, may contain various metals, and especially iron and lead.

"The vessels which should be used by preference are those made of kaolin, and the best of all are made either of Sèvres or Berlin ware. The tubular portion of such apparatus as is designed to be used in toxicological researches should be subjected to preliminary examination. MM. Idt and Ozanam have demonstrated the existence of notable amounts of arsenic in certain kinds of glass, and M. Chevreul has proved that an alkali sealed up for a considerable time in a glass bulb effected in the end a roughening of the surface, and the withdrawal of lead. Causes of error like these should be diligently guarded against, and the general precept may be laid down, that, before proceeding to effect any medico-legal analysis, portions of all the vessels employed should be subject to rigid chemical scrutiny. The chemist who feels that he has not the adequate means at his disposal to enable him to proceed with full confidence, should at least make these exceptional conditions known to the judicial authorities. The chemical examination of reagents is a matter of still greater delicacy. In the present days, when toxicology is a science of itself, when the investigation for poisons is even prosecuted on the organs into which it is presumed the poison may have been absorbed, the ordinary reagents of chemists are for the most part insufficient in the amount of their delicacy. They should all be subjected before employment to a rigorous chemical scrutiny."

Nothing can be more just than this gentleman's remarks, and no principles are more frequently violated.

For the benefit of our veterinary readers we append the following formulae for horse balls, selected from the Pharmacopœia of the Veterinary College:—

BALLS.—In farriery, medicines for horses are most frequently given in form of ball, which answers to the term bolus in medicine. The best form, perhaps, is that of an egg, or of a cylinder 2½ inches long, and one inch diameter. They ought to be made fresh when they are to be given, as when they become hard they will not dissolve in the stomach; a bit of very thin paper is usually wrapped round them to conceal the taste. The basis of purgative balls is usually soap; of stimulant and tonic balls, composed of arsenic or other strong ingredients, flour and paste. The composition of various sorts of balls is given below.

Alternative Ball.—Take 3x of Barbadoes aloes, 3iij of chloride of mercury (or gr. x of bichloride of mercury), 3j of caraway seeds powdered, 3iij of ginger, 50 drops of oil of cloves, and enough of treacle and flour to form a mass, which is to be divided into four balls, one every day till the bowels be opened.

Anodyne Ball.—Take 3j of opium, 3iij of Castile soap, 3ij of powdered ginger, 3j of powdered anise-seed, 3ss of oil of caraway, and enough of treacle to make a ball. Given in colic, or gripes, and fret.

Astringent Ball.—Take powdered opium 3j, ginger in powder 3jss, prepared chalk 3iij, flour 3ij, with treacle, syrup, or honey, to make a ball for looseness. Or, take 3ij of gum kino, 3jss of aromatic powder or powdered ginger, 3ij of Castile soap, and 3ij of flour, with treacle enough to form a ball, as before. Or, take 3vj of diascordium, 3ss each of gum arabic, prepared chalk, and Armenian bole, 3j of ginger, 40 drops of oil of anise-seed, with syrup enough to make a mass. Dose repeated once or twice a day for scourings. Or, take 3ss each of rhubarb, compound powder of gum tragacanth; 3j each of calumbo and ginger, gr. xv of opium, 3vj of orange-peel, and syrup of poppies to make a mass. Dose repeated once a day. Or, take 3j each of mithridate, Armenian bole, gum arabic, and prepared chalk, 3ij of ginger, and syrup of poppies to make a mass. Repeated as before.

Camphor Ball, for gripes and difficulty in staling.—Take 3ijss of camphor, nitre 3ss, with enough of liquorice in powder and syrup to make a ball.

Colic Ball.—Take 3ss of opium in powder, 3ijss each of Castile soap and camphor, 3j of ginger, with enough of syrup and liquorice powder to make a ball.

Cordial Ball.—Take 3ij of grains of Paradise in fine pow-

der, 3ss each of ginger and canella alba; 3jss each of anise and caraway seeds; 3ij of liquorice powder, and enough of honey to make a ball. Or, Take 3iv each of cummin-seeds, anise-seeds, and caraway-seeds, and 3ij of ginger, and enough of treacle to make a mass, which divide into balls of 3ij each. Or, Take 3iv each of anise-seeds, caraway seeds, moist fennel seeds, or liquorice powder; 3jss of ginger and cassia; and make into a mass with honey or treacle. Dose 3ij. Or, Take 3ij each of Winter's bark and prepared chalk, 3iij of powdered caraway seeds, 3ss of opium, 20 drops of oil of anise, and make into a ball with honey or treacle. Or, Take 3ss of powdered opium, 3j of powdered ginger, 3iv each of hard soap and turpentine, and make a ball with liquorice powder. Or, Melt together 3viij of strained turpentine, 3iv of yellow resin, 3vj of soap, and 3ij of sweet oil, add 3ij of oil of anise, 3j of oil of caraway, rubbed up with 3iv of ginger in powder, and make into a mass with linseed powder to form 16 balls.

Cough Ball.—Take 3j each of opium, camphor, and squill, 3ij of gum ammoniac, 3j each of soap and ginger; make into a ball with honey or syrup, adding 20 drops of oil of anise. (See Garlic Balls.)

Diuretic Ball.—Take 1bj each of yellow resin, Castile soap, and Venice turpentine, and dissolve slowly over a fire to form a mass. Dose, 3j to 3jss for gripes, grease, swelled legs, &c. Or, Take 3ss of Venice turpentine, 3j of potassio-tartrate of antimony, and 3j of liquorice powder, to make a ball with treacle. Or, Take 3iv of Castile soap; 3ij each of powdered resin and nitre; 3ss of oil of juniper, with linseed powder and syrup, to make a mass for six or eight balls, according to the strength of the horse. Or, Take 3iv of Castile soap, 3ij each of Venice turpentine and powdered anise-seeds, to form a mass with treacle for six balls. Or, Take 3iij each of strained turpentine and Castile soap, to make a ball with liquorice powder. Or, Take 3iv each of hard soap and common turpentine, and make a ball with caraway powder. Or, Take 3iv each of hard soap and common turpentine, 3ss of opium, 3j of ginger, to form a ball with caraway powder. •

Expectorant Ball.—See Cough Ball.

Farcy or Farcin Ball.—Take 3ss or 3j of bichloride of mercury, 3ss of anise-seed in powder to make a ball with syrup or honey. Or, Take 3j of sulphate of copper or blue vitriol, gr. x of bichloride of mercury, 3ss of opium, 3iij of liquorice powder, to form a ball with syrup. Or, Take 3ij of nitre, 3iij of powdered squills, 3j of camphor, to make a ball with honey, and to be washed down with decoction of hellebore.

Fever Ball.—Take 3j of nitrate of potass, 3ij each of camphor and potassio-tartrate of antimony, and make into a ball with treacle.—(Pharm. Veterinary College.) Or, Take 3jss of potassio-tartrate antimony, 3j of nitre, 3iij of liquorice powder, to make a ball with syrup. Dose repeated twice a day. Or, Take 3j of camphor, 3j of nitre, 3ij of James's powder, or compound antimonial powder, to make a ball with flour and treacle. Or, Take 3ij of compound antimonial powder, 3ss of sesqui-sulphuret of antimony, 3j of nitrate of potass, 3iij of liquorice powder, to form a ball with syrup.

Fever Balls.—(Alternative.)—Take 3iv of Cape aloes, 3xij of linseed meal, and with a sufficient quantity of treacle form 32 balls.—(Pharm. Veterinary College.)

Fever Balls.—(Diuretic.)—Take 1lbs of yellow resin powdered, 3x of linseed resin, and with a sufficient quantity of treacle form 32 balls.—(Pharm. Veterinary College.)

Garlic Balls.—Pound a quantity of garlic cloves till they form a paste, which form into balls of 3j to 3ij each with liquorice powder.

Laxative Balls.—See Purgative Balls below.

Mange Ball.—See Alternative Ball and Mange.

Mercurial Ball.—Take 3j of chloride of mercury, 3ss of Barbadoes aloes, and make into a ball with mucilage of gum arabic.

Purgative or Physic Ball.—Take 3ix of Barbadoes aloes, and 3j of ginger, and form into a ball with syrup or treacle. Or, Take 3xij of Socotrine aloes, 3j each of bitartrate of potass and powdered ginger, and a table-spoonful of olive

oil and syrup of buckthorn to form two or three balls. Or, Take $\frac{3}{4}$ j of Socotrine aloes, $\frac{3}{4}$ j of rhubarb, $\frac{3}{4}$ j each of jalap and bitartrate of potass, $\frac{3}{4}$ j of ginger, and 20 drops each of oil of cloves and oil of anise-seeds, to make a mass with syrup of buckthorn. Or, Take $\frac{3}{4}$ v of Socotrine aloes, $\frac{3}{4}$ j of sesqui-carbonate of soda, $\frac{3}{4}$ j of aromatic powder, 10 drops of oil of caraway, with syrup to make a ball. Or Take $\frac{3}{4}$ j of sesqui-carbonate of soda, $\frac{3}{4}$ j of aromatic powder, and 10 drops of oil of anise-seeds, to make a ball with honey. Or, Take $\frac{3}{4}$ v of Socotrine aloes, $\frac{3}{4}$ ss of Castile soap, $\frac{3}{4}$ j of ginger, and 10 drops of oil of caraway, to form a ball with syrup. Or, take $\frac{3}{4}$ v of Barbadoes aloes, $\frac{3}{4}$ j of ginger, to form a ball with soft soap. Or, Melt $\frac{3}{4}$ v of Barbadoes aloes, and $\frac{3}{4}$ v of hard soap in a slight heat, and add $\frac{3}{4}$ j of ginger and a little sweet oil.

Restorative Balls.—Take lbs of Peruvian bark, $\frac{3}{4}$ j each of grains of paradise, gentian, and calumbo; make into a mass with honey, and divide into 16 balls. Dose, one every morning. Or, Take $\frac{3}{4}$ v of Peruvian bark, $\frac{3}{4}$ j of mithridate or diascordium, $\frac{3}{4}$ j each of canella alba, snake root, and chamomile, all in powder; form into a mass with honey, and divide into six balls. Dose, one night and morning for loss of appetite. Or, Take $\frac{3}{4}$ ss of Venice treacle, $\frac{3}{4}$ v of Peruvian bark, $\frac{3}{4}$ j each of calumbo and chamomile, and 25 drops of oil of caraway, to make into a ball with honey.

Stomachic Ball.—Take $\frac{3}{4}$ ss of gentian in powder, $\frac{3}{4}$ ss of ginger in powder, $\frac{3}{4}$ j of sesqui-carbonate of soda, to form a ball with honey or syrup. Or, Take $\frac{3}{4}$ j of cascarrilla in powder, $\frac{3}{4}$ ss of myrrh, $\frac{3}{4}$ j of Castile soap, with treacle to form a ball. Or, Take $\frac{3}{4}$ j of quassia in powder, $\frac{3}{4}$ ss of aromatic powder, $\frac{3}{4}$ j of sesqui-carbonate of soda, and syrup enough to form a ball. Or, Take $\frac{3}{4}$ j of cassia powder, $\frac{3}{4}$ ss each of calumbo root and rhubarb, both in powder, to form a ball with treacle or syrup.

Strengthening Ball.—Take $\frac{3}{4}$ j of quassia, cascarrilla, calumbo, and gentian in powder, $\frac{3}{4}$ ss of opium, $\frac{3}{4}$ ss of aromatic powder, with syrup enough to form a ball. In scourings and looseness.

Tonic Ball.—Take from $\frac{3}{4}$ j to $\frac{3}{4}$ v of sulphate of iron, $\frac{3}{4}$ j of powdered ginger, and with a sufficient quantity of linseed meal and treacle form a ball.—(Pharm. Veterinary College.) Or, Take from $\frac{3}{4}$ j to $\frac{3}{4}$ v of sulphate of copper, $\frac{3}{4}$ j of powdered ginger, and with a sufficient quantity of treacle and linseed meal form a ball.—(Ibid.) Or, Take gr. v to gr. x of arsenious acid, $\frac{3}{4}$ ss each of sulphate of copper and opium, $\frac{3}{4}$ ss of powdered caraways, with syrup or treacle to form a ball. Or, Take $\frac{3}{4}$ j of sulphate of zinc, $\frac{3}{4}$ ss of opium, gr. v to gr. x of arsenious acid, and $\frac{3}{4}$ ss of caraway seeds in powder, to form a ball with treacle. Or, Take $\frac{3}{4}$ iij of calumbo root in powder, $\frac{3}{4}$ j each of myrrh, cascarrilla, and sesqui-carbonate of soda, $\frac{3}{4}$ ss of opium, to form a ball with treacle.

Worm Balls.—Take $\frac{3}{4}$ j of chloride of mercury, lbj of linseed meal, and with enough of treacle form a mass, and divide into 32 balls.

PHOSPHORIC RAT PASTE.—Phosphorus, $\frac{3}{4}$ j.; flour, sugar, and butter, of each $\frac{3}{4}$ ss.

EXT. CEREVISIÆ.—Cocul. Indic., sem. carui., aa. lb. ss.; sem. coriand., rad. calam. ar., aa. $\frac{3}{4}$ v.; aq. cong., ij.; ext. gent., $\frac{3}{4}$ v.; sap. Hispan., lb. ij.; ferri. sulph., $\frac{3}{4}$ v.

POISON FOR MICE.—Fresh lard, lb.; white sugar, 6 oz.; carb. barytes, 2 oz.; nux vomica, 2 oz.; oils of rhodium and caraway, of each 10 drops; oil of fennel, 5 drops. To be well mixed and laid on sticks in tempting situations.

Ess. ZINGIB.—Rad. zing., gam. pan., 2 lb.; bac. caps., 2 oz.; onc. styx., $\frac{3}{4}$ j.; syr. $\frac{3}{4}$ v.; sp. vini rect. 1 gal.

GREEN INK FOR SURVEYORS.—Ærugin. destil., $\frac{3}{4}$ j.; acid. citric. $\frac{3}{4}$ ss.; acet. destil., $\frac{3}{4}$ ss.

FEVER POWDER.—Pot. nit., $\frac{3}{4}$ v.; camph., $\frac{3}{4}$ j.; croc. st. $\frac{3}{4}$ ss.; cocei. gr. iv.

SALAD CREAM.—Ol. olive O. $\frac{3}{4}$ vj.; p. sinapis, $\frac{3}{4}$ j.; pip. cayen., $\frac{3}{4}$ j.; sodii chlor., $\frac{3}{4}$ vj.; vitell. ovi., no. ij.; acet., $\frac{3}{4}$ vj.

SILVERING FOR BRASS.—Common salt and cream of tartar, of each 3 lb.; muriate of silver, 1 oz.

POISON FOR RATS.—Ground malt, 1 lb.; white sugar, 6 oz. arsenic, 6 oz.; oils of rhodium and caraway, of each 10 drops; oil of aniseed, 5 drops; a table-spoonful to be laid in each of the tracks.

TO CHOOSE INDIAN INK.—The ink which comes from China differs extremely in quality; some of it has glue for its basis, but the better kind has a vegetable gum. The coloring ingredients are, for the coarser kinds, lamp black only; for the superior article, lamp black mixed with a dark-colored sepia produced from a cuttle-fish, peculiar to the Eastern seas. It is scented with musk. To try the quality of Indian ink, first, if the stick has never been used before, wet the end of it with the tongue. If it has been used this will not be necessary, the only object being to remove the outer gloss or glaze. Rub the end then upon one of the front upper teeth; if good, no grittiness will be perceptible—this is the first test. Now break the stick in half, smell it, if fresh and musk-like; if the peculiar smell of mould or of lamp-black is perceived it is not so good. Thirdly, wet with the tongue the two broken ends, join them together neatly as at first, and if the ink be good, the parts will adhere together as tightly as ever.

TO CORRESPONDENTS.

* Gentlemen who send manuscript to the CHEMICAL RECORD under arrangement for payment are informed that original matter alone will be allowed to count; no abstracts, translations, or adaptations being receivable under the terms proposed. The propriety of this will be obvious.

"Mr. Thomas Jefferson."—We are always happy to afford such information as may be in our power, when it does not require an analysis. This it would be unreasonable to expect, seeing the time, trouble, and expense an analysis involves. Persons unacquainted with chemistry are little aware of the tedious steps by which chemical truths are evolved; they think an analysis is little more than turning over the leaves of a book.

"Mr. Henry Palmer."—The so-called diamond-dust had a very short and bad notoriety: instead of sharpening cutting instruments, it infallibly destroyed their edge, and was particularly unfortunate in converting razors into saws.

"Inquirer."—Gamboge is a drastic and very dangerous purgative, which enters largely into the composition of quack pills, although in the regular practice of medicine it is very seldom used, being productive of too violent effects.

"An Assistant."—The term *regulus of antimony* is applied to the pure metal antimony; whereas the term antimony, without prefix, corresponds with the *sulphuret of antimony*. Such is the confusion of terms.

"Mr. Northcote" will not underrate the value of chemical nomenclature when he gets a little better acquainted with chemical science. Those long names of which he so earnestly complains will tend more than anything to shorten his labours in the prosecution of this science. The number of known chemical combinations amount to many thousands, and millions probably remain to be discovered. To remember the composition of only a few of these was no easy task when they were merely designated by conventional names; but, since the plan has been adopted of making the denomination convey a definite meaning, a remembrance of their composition has become easy. Thus, for instance, the term Glauber's salt simply informs us vaguely enough that the substance in question is in some way related to Glauber, whereas the term sulphate of soda conveys to us the precise information that it is a compound of sulphuric acid and soda. Where the complexity of a substance is so great that an appellation would become cumbersome, symbolical representation by chemical algebra becomes a matter of consequence; this he should acquire by degrees, not laboriously, but continuously.

"Mr. N. Ommalley, Glasgow," when in London should look in at our office, when he could receive the necessary instructions.

"A Young Artist."—In what is called etching on stone, acid is not employed. The stone is first covered with a gummy varnish, which the etching point is made to pierce, and slightly to indent the stone underneath. Thus a depression is produced into which the ink sinks. Stone-etching is very troublesome work, on account of the great hardness of the material. With respect to the comparative advantage of copper and steel, as etching materials, the former is much easier to manipulate, but the latter yields a much greater number of impressions without wearing out. The great difficulty experienced in etching on steel consists in the rapid development of peroxide of iron, which accumulates in the lines, and clogs them up. For the purpose of getting rid of this peroxide, acetic acid, or occasionally gallic acid, is mixed with the aquafortis.

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TESTIMONIALS.

From JOSEPH HENRY GREEN, F.R.S., President of the Royal College of Surgeons, London; Senior Surgeon to St. Thomas's Hospital; and Professor of Surgery in King's College, London.
I have made trial of Mr. Frank's Solution of Copaiba, at St. Thomas's Hospital, in a variety of cases of discharges in the male and female, and the results warrant my stating, that it is an efficacious remedy, and one which does not produce the usual unpleasant effects of Copaiba.

(Signed)

JOSEPH HENRY GREEN.

Lincoln's-inn-fields, 15th April, 1855.

From BRANSBY COOPER, Esq., F.R.S., one of the Council of the Royal College of Surgeons, London; Surgeon to Guy's Hospital, and Lecturer on Anatomy, &c.

Mr. Bransby Cooper presents his compliments to Mr. George Franks, and has great pleasure in bearing testimony to the efficacy of his Solution of Copaiba in Gonorrhoea, for which disease Mr. Cooper has prescribed the solution in ten or twelve cases with perfect success.

New-street, April 13th, 1855.

From H. A. CÆSAR, M.D., Surgeon, Professor of Anatomy in the Cork School of Medicine and Surgery; late President of the Hunterian Society of Edinburgh, &c. &c.

I have frequently prescribed Franks's Specific Solution, and deem it a valuable remedy in cases where Balsam of Copaiba may be prescribed with propriety, and have no hesitation in stating it is superior to any other preparation of the Balsam. (Signed) H. A. CÆSAR, M.D.

South Mall, Cork, Nov. 9th, 1841.

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WITH POWER TO INCREASE TO A MILLION.**

PROSPECTUS.

In ushering before the world for its consideration and patronage any addition to a subject previously well known, it is generally expected and required that there should be at least an appearance of novelty, although the subject itself is incapable of receiving any material improvement. The projectors of this Society, however, from experience and correct calculation, having discovered new principles and features in Life Assurance, so peculiarly adapted to the feelings, views, and wants of literary men, artists, musicians, and all persons connected with every branch of art and science, are convinced, when such advantages become known and appreciated, the ATHENÆUM must take the lead amongst those Societies which are ever on the watch to achieve new and beneficial results for all who have confidence in their exertions.

Men of letters and the liberal arts are too generally regarded with censure rather than with commiseration, on account of the unfortunate circumstances so often attending their worldly affairs, and which have unjustly given them a character for improvidence; yet few persons in the active pursuits of business can form a proper notion of the many causes which prevent the student, the scholar, and the secluded artist from being so fortunate as themselves; nor is it here considered fit to analyze such causes, or set right such notions. The object of this Society, therefore, is to allow the man of letters and the artist to indulge in that dreamy existence so peculiarly his nature, and so essential to the development of his talent, and give protection and provision where so much required. For while this urged improvidence is admitted to be no consequence of selfishness,—it being well known that in no other class is disinterested nobleness of spirit so often and unequivocally exhibited,—yet no means have hitherto been devised to arrest this censured characteristic. This Society, therefore, wishes to open an independent course for the consideration of

men of letters, art, and science, especially as it is brought before them with associations of their own, and in no way assuming the offensive and humiliating position of charity.

Many a great work has been left unfinished, many a teeming brain has given way before those powerful foes to genius, anxiety and fear of the future! How often has the man of talent paused and trembled, while he has contemplated the destitution of his family, and all that is dear to him, if overtaken by death in the midst of his projects; and while Life Assurance is suggested to obviate such afflictive thoughts, then the apprehension that, should adverse circumstances prevent punctuality in his annual payments, the sacrifice already incurred will have been in vain. This Society cheerfully and with confidence points to the provision it has made for such cases, where help will be given, and every encouragement afforded to sustain the claims upon it unforfeited and unimpaired.

To the young, the principles of this office will be peculiarly beneficial, the amount of premium being so trifling; while in the course of time the participation in the profits of this Society must return them such sums, that all they may have advanced in their early years will not only have passed again into their own possession, but a property established that will be of value during life, or a handsome bequest in case of death.

It is therefore hoped, by the establishment of this Society, to remove from men of letters and artists the reproach that in so many instances has attended them, to enforce a more ennobling appreciation of their worth, to prevent their becoming objects of charity, which humiliates as much as it relieves; and that, in the midst of their triumphs, and while in the possession of health, there shall not be seen in the dim perspective the almshouse or the prison.

NEW FEATURES OF THIS OFFICE, TO WHICH ATTENTION IS PARTICULARLY REQUESTED.

This office will introduce a system for obviating an acknowledged difficulty in the way of propagating the advantages of Life Assurance. In fact, the principal objection to adopt its blessings, even by many who thoroughly appreciate its value, is the possibility of forfeiting their policy by being unable to meet the payments when they become due; and, on the part of the offices, it has been an unwise, not to say an unjust, proceeding to compel a strict observance of this provision. It has been unwise, for the reason, that, by carrying out this measure to the letter, such enormous profits have arisen from it as to become unwieldy and useless; since the management of them engrosses such attention and trouble as to make the office careless of extending its business. It has also been unjust; for, instead of rewarding prudence and self-sacrifice by assisting, even for a while, such strenuous exertions for the accomplishment of a noble object, or by bestowing some equivalent for past privation, it passes by such virtue unrecognized and unrewarded, and thus perverts the very principle from which Life Assurance emanated. To remedy as far as possible this defect, there will be a fund instituted by the Athenæum, called the Provident Fund, to be raised by the mutual contributions of the members themselves, on the following original and beneficial plan:—

The first five hundred persons who desire to participate in this benefit will leave a tenth portion of their policies for the purposes of this fund, which will be thus applied:—

1st. To the keeping up the policies of such members who shall have previously paid five annual premiums. The aid afforded by this fund for that purpose will not be continued for a longer period than five consecutive years, and to be returned to the Society at the convenience of the assured, with interest at the rate of 2½ per centum per annum, or the sum advanced may be deducted with such interest from the policy when it shall become a claim.

2nd. To grant small loans on the deposit of the policy to those members who may require temporary assistance.

3rd. To such qualified members who really need it, the Directors will have the discretionary power of granting such an amount as will purchase in the Society an Annuity, not exceeding £100, during the lives of themselves and widows; and

4th. To divide among the surviving members, at the end of twenty years from the date of the list being closed, the whole of the remaining and unapplied portion of the fund.

The rates of premium to secure these important advantages are lower than those in many first-class offices where no such privileges exist. For example, to assure £1,000 at the age of 30 in the Equitable would cost £26 14s. 2d. per annum; while a premium of £26 5s. in this office would assure, in addition to £1,000 the sum of £100 to the Provident Fund.

It is also determined to provide, as far as practicable, a similar fund for such of the original Shareholders as may become distressed, by applying a portion of the entire profits of the Society for such purpose.

One important feature of this society, and which has not yet been adopted by any other Assurance Company in this country, although generally in operation on the Continent, is the plan of granting policies unconditionally payable to the holder. The difficulty, expense, delay, and annoyance so frequently experienced in pecuniary transactions in the assignment of policies, have long been felt as a grievance; and the Directors of this Society, having given this subject much consideration, and acting under

the advice of competent legal authorities, are resolved to give the assured the option of receiving policies payable to the holder. The advantages of these policies must be obvious, as their simple construction will give greater facilities in their temporary or permanent transfer to a third party. This has been so fully appreciated on the Continent, that policies in any other form are absolutely refused by the great bulk of insurers. The publicity, so frequently annoying and detrimental, in the assignment and re-assignment of policies in pecuniary transactions, as well as the delay and expense consequent on the old system, have been so often complained of, that the Directors of this Society believe that the plan of making policies payable to the holders must eventually be generally adopted in this country.

A moment's reflection is sufficient to show that the great bulk of the middle and professional classes of this country stand as much in need of provision against the casualty of permanent sickness as against that of death; while statistical inquiries have proved that nearly 5 per cent. of the adult population of this kingdom are constantly incapacitated from following their occupations, and a great portion at advanced periods of life become permanently invalided. Therefore, to meet so important a desideratum, this Society will, on very moderate terms, grant Policies payable during the time of very long sickness, or when accident or any other casualty shall prevent the assured obtaining his livelihood.

To conclude, the Directors wish it emphatically to be understood, that there are no privileges or advantages in this Institution in which the public do not fully and equally participate, as the appeal is to them; and no benefit can accrue to any class, however worthy or respected, without the co-operation and support of all.

This is the only Society that issues Policies absolutely indisputable. Claims paid immediately on satisfactory proof of death, and the exhibition of such documents as are required by law.

Seventy per cent. of the profits divided among those assured on the participating scale, thus securing all the real advantages arising from a Mutual Association, without incurring any legal or pecuniary liability whatever.

The first division of profits will take place at the end of seven years, and thenceforward every five years, and may be applied as a bonus, to be added to the sum assured, in reduction of future premiums, or in cash.

Diseased lives assured on equitable terms, the extra premiums being discontinued on resumption of the assured to permanent health.

Members of consumptive families assured at equitable rates. Assurances may be effected from £50 to £10,000.

Endowment Assurances granted, payable to the Assured, should he live to a given age, or to his representatives should he die before.

Immediate and deferred annuities on very favourable terms. No entrance fee charged.

The extra premiums for residence in foreign climates are lower than in other offices, and are founded on data.

Assurances may be effected in one day, the medical officer being in attendance.

Interest at the rate of 5 per cent. allowed on the paid-up capital. Medical men remunerated in all cases by the Society.

A liberal commission allowed to all who introduce business. HENRY SUTTON, Manager.

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Gresham Life Assurance Society, for Ordinary and "Declined" Lives. Offices—37, Old Jewry, London.

TRUSTEES.
Matthew Marshall, Esq., Bank of England.
Stephen Olding, Esq., Lombard-street.
William Smees, Esq., Bank of England.

This Office will be found highly eligible for every description of Life Assurance.

Perfect security is guaranteed by an ample paid-up Capital, subscribed by persons of the highest character and respectability.

The Policies are Indisputable, unless procured by fraud, and claims are promptly and liberally settled.

Policies may be effected without loss of time, the Directors, together with the Medical Officer, being in attendance at the Office every day.

The Lives of Individuals whose habits are regular and temperate, and who, though neither diseased nor strongly predisposed to disease, have been declined by other Offices, are Assured at Equitable Rates; hence the probability of Lives being rejected by the "Gresham" is reduced to the narrowest limit.

Policy Holders may obtain Loans on real or personal security.

The Funds of the Society are invested in the most advantageous manner, so as to promote security, and to afford the largest possible Bonus to the Assured at the periodical divisions.

The Management of the Society is conducted in the most economical manner, as is shown by the Annual Reports.

Upwards of Two Thousand Proposals for Assurance were received in the two years ending July, 1850, amounting in the aggregate to nearly a Million Sterling; and the Directors were enabled to carry upwards of Ten Thousand Pounds to the Society's Chest during the second year alone, chiefly from the Premiums taken during last year.

A liberal Commission allowed to Agents and Solicitors.

N.B.—Active and influential persons will be appointed in districts where the Society is not already represented.

THOMAS ALFRED POTT, Secretary.

Bury's Royal Pompadour Powder, for daily use, to remove that redness and irritation remaining on the skin after washing, or from any other cause, as well as possessing the most cooling, softening, and balsamic qualities, and imparting an exquisite whiteness and clearness to the complexion.

It is strongly recommended to the notice of mothers and nurses for the use of infants of the most tender age, being far superior to any other powder; also after sea-bathing, and for gentlemen after shaving its agreeable effects will be fully tested.

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Sold in packets, 1s. and 2s. 6d. each. Those at 2s. 6d. are equal to three 1s. packets. Forwarded by post for sixteen or thirty-eight uncut stamps, by the Proprietor, ALFRED BURY, 10, Exeter-change, London and sold by Perfumers, Chemists, and Patent Medicine Venders.

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Collars are not sold by any hosiers or drapers, and can therefore be obtained only at 185, STRAND. The Shirts are made in two qualities. The first is 40s. the half dozen, the second quality 30s. the half dozen.

Gentlemen who are desirous of purchasing shirts in the very best manner in which they can be made are solicited to inspect these, the most unique and only perfect fitting shirts made.

Price Lists, containing directions for self-measurement and every particular, are forwarded post-free, and the pattern books to select from, of the new Registered Coloured Shirting, on receipt of six stamps.

The COLLARS possess an improved method of fastening, which entirely dispenses with the use of strings, loops, or elastic contrivances, adapted to any size, suitable for once or twice round cravats, may be had in three different sizes, and either rounded or pointed. Price 11s. 6d. per dozen; two, as sample, sent post-free, on the receipt of 28 postage stamps.

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Joseph Loader, Upholsterer and Cabinetmaker, 23, PAVEMENT, FINSBURY, LONDON.—The extensive celebrity of JOSEPH LOADER'S Establishment for twenty-five years, for all articles pertaining to the Upholstering business, affords a certain guarantee to all purchasers from his stock that whatever they may select will be of the most approved fashion and best workmanship, moderately charged.

A tasteful assortment, suitable to the decoration of the Dining, Drawing-room, Library, and Boudoir, is uniformly kept, comprising Chairs, Tables, Pier and Chimney Glasses, Chiffoniers, Drawers, Wardrobes, Carpets, Mattresses, and Bedding, at regularly fixed prices, corresponding with the wants or elegances of household economy, offered on terms which none can successfully compete with.

Joseph Loader's Portable Bedstead, which forms an ottoman settee, easy-chair, and bedstead, with three cushions, stuffed in printed cotton, on brass socket castors, £2. 10s. to £4. 10s.; and the celebrated

PATENT SELF-ACTING RECLINING CHAIRS,

that recline and elevate with the least possible trouble or difficulty to the occupier, the weight on the seat acting as a counterbalance to the back, by means of his Patent Self-adjusting Lever, requiring no rack, catch, or spring, to retain any required position.

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Solid Rosewood Chairs, French polished	..	..	0 15 0	each to 1 2 0
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Gutta Percha Carboys. The Gutta Percha Company

have been favoured with the following letter from

MESSRS. JAMES MUSPRATT AND SONS, OF LIVERPOOL.

(Copy.)

Liverpool, 8th September, 1850.

Gentlemen,—In reply to your favour of yesterday, we give it as our opinion that cool Muriatic Acid has no effect on the Gutta Percha. We have now had it in use for nearly a year, and we have no doubt, that in a short time, nothing but Gutta Percha will be used for conveying Muriatic Acid. For, although rather expensive at first, it soon pays for breakage and baskets of glass carboys.—Yours truly,

JAMES MUSPRATT AND SONS.

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ADVERTISEMENTS.

NATIONAL PROVINCIAL LIFE ASSURANCE SOCIETY.

COMPLETELY REGISTERED AND INCORPORATED.

ESTABLISHED UPON THE PRINCIPLE OF MUTUAL LIFE ASSURANCE.

GUARANTEE FUND, £50,000, IN 10,000 SHARES OF £5 EACH.

DEPOSIT, £1 PER SHARE.

It is not contemplated that any Call beyond the original Deposit will be required,

INTEREST AT THE RATE OF FIVE PER CENT. ALLOWED UPON THE PAID-UP CAPITAL.

The Policies issued by this Society will be absolutely Indisputable, and not liable to Forfeiture.

One Tenth of the entire Profits of this Society will be applied to a Fund, to be called the "Educational Fund," for the permanent Endowment of Schools, to which Proprietors of Five Shares and upwards, and the Holders of Participating Policies for £300 and upwards, will be entitled to nominate Scholars.

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Notwithstanding the many novel and valuable features recently introduced as naturally connected with the system of Life Assurance, and the universality of the application of its principles to the various concerns of life, it is remarkable that no well-digested system has been propounded, with the view of rendering its advantages more acceptable to the public, and strengthening the increased desire on the part of individuals and heads of families to provide for the future, by making that provision also contributory to the wants of the Children of the Assured during the lifetime of the Policy Holder.

The National Provincial Life Assurance Society has been established with the view of promoting a greater extension of the principles of Life Assurance generally, and, by applying the principles of Mutual Aid and Co-operation to individuals in every class and condition of life, to secure a system of Education to the Children and Relatives of its Share and Policy Holders.

To effect this truly national and laudable object, and to promote the growing spirit of mental progress on the broadest and most tolerant principles, suited to the highly intellectual acquirements of the present times, a portion of the profits, at each division, derived from the business of the Society, will therefore be set apart for the permanent Endowment of Schools, in which the Shareholders of the Society, and persons assured therewith, will be allowed to nominate Scholars.

This Society is established upon the principle of Mutual Assurance, according to the Assured all the advantages of the Mutual principle, without the personal liability of its Members, and with the security of a Guarantee Fund of £50,000 divided into 10,000 Shares of £5 each. No liability is incurred beyond the amount of the shares actually subscribed for.

It is provided by the Deed of Settlement that at each division of profits, to be made annually after the first five years of the existence of the Society, that out of every One Hundred Pounds of profit made there shall be appropriated and applied:—

- First.—To the Members on the participating scale, either by a reversionary addition to their Policies, by a reduction of their future premiums, or by a cash payment 75 per Cent.
 - Secondly.—To the creation of a Fund for the permanent Endowment of Schools, to which Proprietors of Five Shares and upwards, and the Holders of Participating Policies for £300 and upwards, will be entitled to nominate Scholars 10 per Cent.
 - Thirdly.—To a Fund for the purpose of redeeming the paid-up capital of the Society, together with a bonus of £100 per Cent.; thenceforward the whole of the profits (with the exception of 10 per Cent., which will be applied to the "Educational Fund" until such Fund shall have amounted to £500,000) will be divided amongst the assured 5 per Cent.
 - Fourthly.—To the Shareholders 10 per Cent.
- The Policy Holders of £100 and upwards, on the participating scale, will be allowed to vote with the Proprietors at the Annual Meetings, in the election of the Directors and Auditors.

Among the many advantages offered by this Society is the assistance rendered to the Assured, who from temporary difficulties may be unable to pay the premium when it becomes due, and thus, in other Societies, would incur the forfeiture of the Policy, and the loss of the Premiums already paid. The National Provincial Life Assurance Society offers this peculiar advantage, viz., after the payment of three full annual premiums, they will be allowed to borrow as often as the value of the Policy will admit (at £5 per cent. interest), in every case a sufficient sum to pay the premium, and thus keep the Policy in force; such premium and interest to be deducted from the Policy when the Assured dies. The Policy Holder, however, will have the option of freeing his Policy from the debt at any time, by paying the amount due.

Another important advantage offered by this Society is, that, in the event of an Assurer becoming unable to continue the Payment of Premiums, he will, by the surrender of his Policy to the Society, be granted by the Directors another Policy of less amount, but equivalent in value to the Premiums already paid, and exonerated from any future payments.

INDUSTRIAL BRANCH.

The Directors of this Society, in addition to the ordinary business usually transacted by Life Assurance Societies, have formed a distinct Branch for the Industrial Classes, embracing every system of Life Assurance, and for that purpose have caused extensive tables to be prepared, which will combine the interests of every class of Assurers in a manner more comprehensive than has hitherto been attempted by any similar Society.

Every variety of Life Assurance business transacted.

Medical Practitioners paid by the Society.

The Lives of Invalids Assured at rates adapted to the circumstances of each case.

Loans granted on Personal Security in connection with Life Assurances effected with this Society.

The usual Commission allowed to Solicitors and Agents on the introduction of business.

J. W. SPRAGUE, Manager.

ORIGINAL SERIES.

ON AGRICULTURAL CHEMISTRY.

By M. P. JOIGNEAUX.

(Continued from page 103.)

The atmosphere is for vegetables an inexhaustible source of nourishment; its provisions are so well organized and so numerous that the chance of their possibly becoming exhausted need not awaken in us the slightest inquietude. But it is otherwise as regards the earth, which becomes exhausted to a variable extent; and the ingenuity of man requires to be called into play for the purpose of restoring the various constituents which vegetable growths remove.

Soils do not contain an indefinite amount of salts and alkalis necessary to vegetation; and, however little the growth of vegetables may be—yet, after a certain period, the amount of phosphates, and silicates of potash, soda, and ammonia, which the earth possesses, become in the end diminished. If, then, it be desired to maintain a portion of land in its primitive fertility, the agriculturist must return to it with care and intelligence the principles which the growing vegetables have removed.

Suppose, for example, that the object is to restore the fertility of a soil exhausted by vines. The first question to be determined is the agricultural food of vines—a question to be determined by a chemical analysis of the tissue of the vine itself. Well, it is satisfactorily proved that the vine contains a considerable amount of potash, a circumstance which renders the ashes of this plant better adapted than the ashes of most others for the formation of alkaline leys. This chemical fact informs us that vines during their growth remove from the soil a certain amount of potash which the agriculturist must replace, in order that the fertility of that soil for the growth of vines may be restored.

If, instead of adding a manure rich in potash, you employ manures containing abundance of silica and alumina, you fail in the object you have in view; you impoverish your soil, and damage your wine; then very coolly you apply to the chemist to impart goodness to this wine, which is just as ridiculous as requesting a physician to cure the incurable.

If, instead of vines, we turn our attention to corn, chemical analysis reveals to us that straw contains abundance of silica, in combination with alkaline substances, either potash or ammonia; and in the grain itself an amount of nitrogen proportionate to the gluten contained. Hence, in order to re-establish the equilibrium of a soil exhausted by a growth of wheat, a supply of silica, of potash, and of ammonia must be added; but it is necessary that the substances thus added should be in some soluble form; and this condition is only effected by the influence of the atmosphere, and the decomposing agency of lime. It is the difficulty of determining the proper solution of the nutritive substances that prevents the agriculturist from growing on one and the same soil many crops of one plant in succession.

Let us now direct our attention to a crop of potatoes—vegetables which, as agricultural chemists well know, contain no silica, and which, therefore, cannot remove this element from the soil. From what I have already said, it will be evident that a growth of potatoes may be made to succeed a crop of wheat without effecting the removal of any silica; but potatoes require abundant farmyard manure, for the purpose of affording them the potash, the phosphates, and the ammonia, which enter so largely into their composition. These observations cannot fail to render evident the immense advantages which agriculture is some day destined to experience from the rational application of chemistry; and it is greatly to be desired that the example set in Germany by M. Liebig, and in France by M. Boussingault, may stimulate others to follow in similar paths of investigation.

Hereafter, depend upon it, chemical analysis will resolve the elements which enter into the tissues and the liquids of each plant—will make known the alimentation best adapted for each—and will thus enable the agriculturist to avoid the unsatisfactory result of setting plants to

grow in uncongenial soils, or manuring them with compounds not capable of yielding the elements they require.

Appealing to the animal kingdom for a parallel illustration, I will suppose the analytical chemist to have placed before him three different kinds of urine for analysis. The first is that of a tiger; the second that of a human being; the third that of a rabbit. The chemist readily perceives that the first specimen, the urine of the tiger, is richest in urea and uric acid; the urine of the rabbit poorest in the same; and the urine of man, in this respect, affords the mean. Well, urea and uric acid, are remarkably rich in nitrogen; and, as might have been anticipated, the most nitrogenized urine is produced by the animal whose food is exclusively flesh, the least nitrogenized being yielded by the animal which lives exclusively on vegetables; the urine of man, whose food is both of an animal and vegetable kind, naturally presenting a mean. Thus the harmony between reasoning and demonstration in this case is perfect: the constitution of the urine bears a direct relation to the constitution of the food. Why, therefore, should there not be a similar harmony—why should there not be a similar connection between the food and the constitution of plants? Such a connection there undoubtedly exists, but not always evident; daily, however, the science of chemistry is throwing light on this most important subject.

Immediately that the chemist has succeeded in absolutely determining the pabula of various vegetable growths, nothing will be easier than for the agriculturist to obtain many successive crops of the same vegetable without changing the soil, the only care then being to give just the proper quantity of nutriment, neither too much nor too little; the latter causing vegetables to languish, the former causing them to develop with unhealthy rapidity, and speedily to die.

Having, therefore, established the connection existing between the constituents of vegetables and the elements of soils, we are led naturally to a consideration of the nature of manures which are destined to be the means of restoring to a soil the elements it may have lost by the exhaustion of vegetable growths. Contrary to received usages, I shall divide manures into three well-defined classes, of organic manures, inorganic manures, and composts. The former may be subdivided into vegetable, animal, and mixed.

By vegetable manures we understand green refuse leaves of cabbage, potatoes, and other vegetables; the marc of olives, grapes, apples, and pears; the refuse of tanyards, starch-manufactories, &c.

Animal manures comprehend blood, flesh, horn, bones, hair, wool, urine, feces, guano, &c. Vegeto-animal manures are the dung and litter of sheep, horses, cows, swine, and other animals.

Inorganic manures comprehend wood ashes, alkaline leys, burnt turf, ashes of seaweed, sulphate of ammonia, ammoniacal water, phosphate of lime, sea-salt, gypsum, and, in short, all the various substances obtained from the mineral kingdom, which are used for manure.

Green manures, that is to say, vegetables which, whilst growing, are ploughed into the soil to be manured, should, according to the dictates of theory, be chosen from the division termed *non-exhausting*, that is to say, from those which derive their chief nourishment from the air. It follows by attending to this rule that the soil would gain to a much larger extent than if the other course had been adopted.

Viewing the question, then, under the aspect of science, it is quite certain that perennials are far better than annuals as manuring agents, but their utilization is greatly limited by the slowness of their growth, and hence, practically speaking, they can seldom be advantageously employed. In general agriculturists recommend for green manures, tansy, vetches, young crops of maize, beet, turnip, rape, lucerne, and trefoil, all of which present the advantage of quick growth.

Generally speaking, these green manures possess but an indirect amount of beneficial agency, and, so far as France is concerned, are more adapted to the central than the northern districts; a circumstance which explains the estimation in which they are held by M. Gasparin, an agriculturist in the former department. They are employed under the following circumstances:—

1. For manuring mountainous soils in situations where the access of waggons or carts would be difficult or impossible.

2. For poor meagre soils in which there is a deficiency of argillaceous matter, not sufficiently retentive of water, and in which, consequently, the roots of plants are exposed to suffer from the sun's rays.

3. When certain delicate growths, such as choice vines, prefer a slight to a heavy manuring.

In the former case, green manures dispense with the necessity of carriage; in the second, they maintain a genial humidity, favourable to vegetation, whilst they enrich the soil by their decomposition; in the third case they effect a good quality of result without forcing the plant into an unhealthy state of vegetation. Green manures are not equally applicable to all soils. By their decomposition they form acids and a debris in which humidity lingers for a long time; consequently, if they are employed for argillaceous soils, you chill the soils which are already too cold, by imparting to them a humidity which they do not require, and you give them an acidity which they cannot neutralize by combination, seeing they contain neither chalk nor alkalis in quantity sufficient for this purpose. If, then, the farmer, for want of better manners, finds himself under the necessity of employing green plants on argillaceous soils, I advise him to employ, simultaneously, either lime ashes or calcareous road scrapings, as a means of counteracting the injurious effects of acidity. On siliceous land green manures produce an excellent effect, because they furnish to them a sufficient supply of water, very useful during times of excessive drought. But here again, as in the case of argillaceous soils, it is necessary to neutralize the action of the acids, resulting from vegetable fermentation, by the admixture of calcareous matter.

In soils where lime abounds green manures produce excellent results, and do not require any precaution in their employment. I am persuaded that, by using them abundantly in poor lands of our ancient province of Champagne, the cultivator would succeed, after a short period, in imparting to them great value. Unfortunately, however, the manuring of a field with its own crop is costly, however low in value the crop may be, and, besides, the time thus expended is considerable; hence there are limits to the extension of this plan of manuring.

PROGRESS OF SCIENCE AT HOME AND ABROAD.—TRANSACTIONS OF SOCIETIES, COMMUNICATIONS, &c.

PARIS ACADEMY OF SCIENCES.

Sitting of Aug. 25.

ON THE APPLICATION OF ELECTRO-MAGNETISM AS A MOTIVE POWER.

By M. ARISTIDE DUMONT.

The experiments described by M. Dumont, in his communication, were made on two machines of different construction. The first consisted of a flywheel of cast iron mounted in a framework of wood. To the circumference of the flywheel were attached twenty-six plates of soft iron. Between these plates of wood were disposed, in order to withdraw the circumference of the flywheel from the magnetic influence. Right and left on the framework four electro-magnets were placed, two on each side. Each couple of electro-magnets were arranged in an inverse direction, those of the right corresponding to the centre of the nearest two plates of soft iron; those of the left facing the two plates of wood. The voltaic current from the battery was sent in succession to the electro-magnets of the right and of the left by an electrical distributor mounted on the axis of the flywheel.

The second electro-motive machine had a direct movement. It consisted simply of an electro-magnet, furnished with its armature. This last was attached to the end of a lever lifting a weight. The communication or interruption

of the current took place by the movement of the armature itself. This second machine differed from the former in the circumstance that in it the magnetic attraction operated direct without decomposition and without loss; whilst in the machine with the flywheel and plates of soft iron, one part only of the attractive force is made use of, the other being destroyed in the direction of the axis.

The experiments made by M. Dumont were undertaken principally with the object of determining the cost of the electro-magnetic power, and the relative producing power of one machine as compared with the other. The battery employed was one of Bunsen's, the order of the elements being reversed. At the commencement of the experiments the mean weight of each element before charging the battery was 2674 kilos., and the weight when charged 4338 kilos. In these numbers the weight of amalgamated zinc for each element was represented by 1228 kilos.

The first experiments were made on the flywheel machine, and lasted seven hours. A battery of sixteen elements was employed. The mean power developed was 0.20 of a kilogramme per second, and the weight of zinc consumed in each element was 7.50 grammes per hour. The maximum weight raised was 90 kilogrammes, this being the extreme power of which the machine was capable. Hence the result obtained showed that the consumption of zinc per hour, and per horse power, was 45 kilogrammes, an expenditure much greater than that of the second machine, as we shall now proceed to show. The experiments made with the second machine were conducted at two different periods: the first for two hours and a half, the second for four hours. In both cases only six elements were employed. In the first series of experiments the mean power developed per second was 0.64 kilo., and in the second 0.675 kilo., that is to say, a power at least three times greater than in the flywheel machine, although only one electro-magnet was in operation, and the battery composed of six instead of sixteen elements, equivalent to a power thirty-two times greater than that produced by the first machine. The expenditure of the zinc, however, did not increase in the same proportion, for in the first series of experiments the consumption was 10.70 grammes per hour, and per element; and in the second series 14.10 grammes, giving a mean of 12.40 grammes, showing in the development of a given degree of power, that the consumption of zinc by the second machine was only one-fifth that required by the flywheel machine, equivalent to a consumption of only 8.280 kilos. of zinc per hour, per horse power. The hourly expenditure of the second machine was thus found not to exceed 18 centimes per hour, and this whilst producing a mean power of 0.67 kilo. per second, and being capable also of attaining a maximum development of 120 kilogrammes.

M. Dumont, in conclusion, remarked that a power of this degree, although not a considerable one, might, nevertheless, be usefully applied to various purposes in the arts and manufactures wherein but little power is required, and where it is a desideratum to obtain it quickly and at irregular intervals, or, so to say, just when required, and without waste, a condition difficult to realize with steam, which also requires expensive apparatus, often inconvenient to erect in small workshops. For instance, M. Dumont calculates that a power of 0.67 kilo. produced by the second machine of six elements, and at an expense of 18 centimes per hour, would suffice to raise in one hour to the height of 8 metres a supply of water necessary for the household service of four persons at the rate of 60 litres per head per diem.

ON ASPARTIC AND MALIC ACIDS.

By L. PASTEUR.

In a communication presented some time since to the Academy, M. Pasteur had announced, amongst other results, that the aspartic and malic acids possessed the faculty of deviating the plane of polarization of the luminous rays, and that this property was carried through all their saline combinations. On the other hand, he pointed out the fact that the natural fumaric acid, or that which is obtained by

the dry distillation of malic acid, does not possess this property. A few days previous to the presentation of this communication M. Dessaignes made known the fact of the transformation of acid fumarate of ammonia into aspartic acid. If we bring these two results together, it would appear that aspartic acid, a substance endowed with rotatory action, might be obtained artificially by means of acid fumarate of ammonia, a substance devoid of this property. Now, as up to the present time we have not obtained by any laboratory process a substance possessing the power of acting on the plane of polarization derived from compounds which themselves do not possess this property, M. Pasteur was led to think that the aspartic acid obtained by M. Dessaignes might differ from natural aspartic acid, that is to say, from that which furnishes asparagine, by the absence of the property of molecular rotation. Wishing to ascertain the correctness of this supposition, M. Pasteur obtained from M. Dessaignes a small quantity of this acid, and, having submitted it to the usual optical tests, he found that, in fact, it exercised no action on polarized light; thus the aspartic acid derived from a body possessing no action on the plane of polarization of the luminous rays is itself inactive. In other respects the chemical properties of the two acids present the most complete resemblance the one to the other; and every chemist who had not compared their rotatory property would, like M. Dessaignes, conclude that the two acids were identical. They differ, however, in the point above mentioned, and by this test they may be distinguished.

The readiness with which asparagine and aspartic acid passes into malic acid is well known. M. Pasteur has assured himself that the acid thus obtained is in every respect identical both in a chemical, optical, and crystallographical point of view with the malic acid obtained from the mountain ash, the apple, or the grape. Now, on applying to fresh aspartic acid (without action on the plane of polarized light), exactly the same mode of action M. Piria has employed to obtain malic acid by the aid of asparagine, M. Pasteur transformed it into malic acid equally devoid of action on polarized light.

M. Pasteur, therefore, proposes to designate these acids and their derivations by the names at present attached to them, with the addition only of the expressions *active* or *inactive*. We should thus say active malic acid, active aspartic acid; inactive malic acid, inactive aspartic acid. He insists the more on the importance of applying these terms, inasmuch as it is impossible to distinguish these substances by any chemical means. He states, in fact, that every preparation which can be made with the active acids can also be made with the inactive; the resulting compound always possessing the same elementary composition, and the same chemical properties. Thus, for example, active malic acid, when heated, is transformed at a temperature of about 150° C. into two volatile pyrogenous acids, the malic and the fumaric. The same thing occurs in the case of inactive malic acid. Malate of lead possesses the property of melting at a temperature below 100° C. The same result is obtained with inactive malate of lead. All the active malates and aspartates possess corresponding properties with the inactive malates. Lastly, the corresponding salts have always the same chemical formula.

As regards the crystalline form of the active and inactive products of the same composition, they offer some curious observations. Sometimes they are distinct and incompatible, sometimes they are sensibly the same, with the same angles. Thus active aspartic acid and aspartate of soda crystallize in the form of a right prism, with a rhombic base; the corresponding inactive products crystallize in the form of an oblique prism with a right-angled base. The active bimalates of ammonia and of lime, on the contrary, crystallize in the form of a right prism with a rhombic base, and the inactive corresponding bimalates not only crystallize in the same form, but also with the same angles: the crystals, however, of the active substances have hemiedric facets, which are altogether absent in the crystals of the inactive combinations. It will thus be seen that the molecular constitution of the inactive substances is not incompatible with a crystalline form identical with that of the corresponding active

substances, and we may presume, with some appearance of truth, that when there is an incompatibility in the forms it is on account of a dimorphism.

Sitting of September 1.

The only two papers read were on medical subjects.

M. Payen presented a copy of his work entitled "A Treatise on Agriculture, Practical and Theoretical."

M. L. Del Re, director, *ad interim*, of the Royal Observatory at Capodimonte, forwarded a communication relative to the planet recently discovered by M. Gasparis.

M. Baudrimont presented some observations on the late eclipse of the sun; and M. Emanuel Liass a communication on optical meteorology.

M. Benoit (Herauld) requested that a sealed packet deposited with the Academy at the sitting of August 18 might be opened. It contained a note in which the author stated that he considered it possible to turn faecal matters to a useful account, by combining them with other materials to form a fuel capable of being employed under various forms in different conditions.

A letter was received from the Minister of Public Instruction, informing the Academy that, by a decree of the President of the Republic, it is authorized to accept the legacy of 200,000 francs bequeathed to the Academy by the late Dr. Jecker, wherewith to found an annual prize, to be accorded to the author of the most useful work on organic chemistry.

Chemical Record

AND

DRUG PRICE CURRENT.

SATURDAY, SEPTEMBER 6, 1851.

USES AND ABUSES OF THE PHARMACEUTICAL SOCIETY.

IN another part of our current number we publish a letter from Mr. Hollier, in which, after offering testimony that awakens in us feelings of gratitude and pride, the writer admonishes us to be gentle with the Pharmaceutical Society, which he remarks has already done much good, and is calculated to do more.

As any misunderstanding of our true opinions on this subject would be eminently undesirable, we beg to assure our correspondent thus early that nothing can be further from our thoughts or desires than the depreciation, directly or indirectly, of the Pharmaceutical Society.

None better than ourselves know the benefit it has already conferred; none are more alive than ourselves to the increased advantage it might be made to diffuse throughout the ranks of the pharmaceutical profession by a better system of organization; but living in the focus of metropolitan intelligence—brought daily into contact with different members and sections of the pharmaceutical body—mixing amongst those to whom the intrigues, the abuses, the jealousies, the squabbles of the Pharmaceutical Society are matters of public comment and scandal—we should be false to every interest we profess to advocate, cherish, and advance, did we, for the sake of culling the passing favours of a day, conceal our true opinions respecting an organization so intimately connected as is the Pharmaceutical Society with the interests of the chemists and druggists.

The proposition will not be demurred to, we imagine that the Pharmaceutical Society was not made for the

honour or personal interest of individuals, connections, or families, but for advancing the general interests of the pharmaceutical profession;—and if we find that this object has been in any way contravened; if we find that cliques have sprung up whose tendencies are adverse to the principles they profess; if we find feuds, heartburnings, rivalries, nay, open quarrels—of frequent occurrence, in the council of the society itself; if we find the votes of special committees overruled by the power of a self-interested and irresponsible clique; if we find the interest of the practitioners as a class continually ignored and set aside, in deference to the interests of a select few—then, we repeat, our functions of chemical journalism would be ill discharged by a timid compromise of expression couched in the delicacy of bland words.

We wish the Pharmaceutical Society well; we desire the moral and intellectual advancement of the pharmaceutical community; every inducement exists that we should do so, even appealing to no higher source of impulse than our journal's commercial success; and, with the object in view of promoting the interests of the class we represent, we will unsparingly disclose every shortcoming, every abuse which militates against the efficiency of this society, or affects in any manner the important community of chemists and druggists.

On this occasion our disinterestedness will be vindicated by the comments we are about to make, and which, if they should result in effecting an amelioration of the abuses about to be indicated, would naturally be assumed to touch adversely our own personal interests.

The literary aspect of the *Pharmaceutical Journal* is of a kind that neither advances the literary reputation of its management nor subverts the interests of the pharmaceutical body. With the exception of a few stray letters of value from Dr. Pereira, and two or three other gentlemen, the contents of this journal are a disgraceful plagiarism from published works. Even recently, on so important an occasion as the meeting of the British Association, the editor contented himself with making second-hand abstracts from the pages of the *Athenæum*; and as to the articles known as "editorial," they are of a kind requiring neither comment nor designation.

It may not be generally known to the provincial chemists and druggists, if, indeed, to the majority of those in London, that some time since a committee of investigation was formed, having for its object to place the management of the *Pharmaceutical Journal* on a new basis, and to commit its editorial management to the charge of one better capable of doing justice to its requirements than the honourable member for St. Alban's. It resulted from the investigation that the change of editorial mismanagement was proven, and a resolution was passed *nem. con.* that the journal should henceforth appear as the organ of the society—not of Mr. Bell.

No sooner, however, was this resolution known than some extraneous influences were brought into play, which ended in stultifying so completely the decision of the committee, that several of its members, when met in conclave on the council, actually reversed their own previous votes!

Need we say to the chemists and druggists of Great Britain that this kind of secret influence is not exactly of a

kind to secure the objects for the accomplishment of which the Pharmaceutical Society was founded? Need we point out to them the fatal consequences to a scientific assembly which must result from permitting such practices to remain without protest or check?

Let it not be thought either that the strenuous persistency with which the editor clings to his post is the result of a misdirected desire to benefit his profession: there exists the possibility of a motive far less noble than this; a motive which the advertisement sheets of the *Pharmaceutical Journal* will easily explain.

Under the supposed guarantee of circulation implied by the circumstance of a journal appearing as the organ of a society, a large number of advertisements fall in, and, whether the literature of a journal be good, bad, or indifferent, these advertisements will, under the exceptional case indicated, generally not vary in their amount to any remarkable extent. Taking advantage of this fact, it is far from uncommon for a scheming proprietor to support a journal merely for its advertisement sheet; and it often becomes his major interest to fill his pages with extracted matter, which costs him nothing, rather than pay the heavy fees necessary for good contributions. This plan, as the mere commercial scheme of a man whose only object is to acquire money, is scarcely defensible, because it implies a tacit misrepresentation to those who advertise in his pages. Surely, then, the plan is worse than indefensible when had recourse to under the guise of doing benefit to a scientific body by one of themselves.

This is the first great abuse we have thought desirable to notice in connection with the Pharmaceutical Society. The redress is in the members' own hands.

FRAUDS OF DRUG-GRINDING AND WHOLESALE DRUGGISTS.

Our idea of investigating the adulteration of drugs has been well responded to by several correspondents, who have sent us letters complaining of the numerous impositions they have suffered from dealers whose only object seems to be the underselling of honourable competitors.

One gentleman, whose letter we publish, has forwarded a specimen of bitartrate of potash adulterated to a very large extent with alum, as we have determined by analysis.* Our correspondent offers, as will be seen, to furnish us with the name of the dishonest party (we have no milder term for him) who perpetrates this shameful fraud, which name we shall add to a list of others which we are at this time engaged in collecting, with a view of publication for the benefit of our pharmaceutical friends. This publication will not be a mere vague accusation of impropriety against any one, but will contain the specific case of adulteration as determined by analysis; and will be no less advantageous to the fair trader than ruinous to the dishonest system against which our endeavours are especially directed.

Few pharmaceutical adulterations are more to be deprecated in a sanitary point of view than the sophistication of cream of tartar with alum. Unlike the majority of drug-grinding additions, which merely involve the admixture of a totally inert substance, this is one which has not the

* We will publish the percentage next week. Our precipitate of sulphate of baryta is not yet dry.

questionable merit of being negative. Alum¹ is a constipating agent, and cream of tartar is a mild purgative, largely administered, as we all know, not only in medical practice, but entering into the composition of febrifuge diet drinks of household medicine. On the first accession of febrile symptoms, especially in children, those acquainted with medicine well know that a mild purgative, timely administered, will, in a large majority of instances, cut short every unfavourable symptom; whilst the neglect of such a treatment would have permitted the first mild symptoms to run into violent disease. What words of disapprobation, then, can sufficiently express the turpitude of those who, having their own aggrandizement solely in view, actually throw in the way, not only of medical men—but of mothers, of nurses—a substance which, so far as relates to the question under consideration, is an active poison?

We hesitate not to say—and any jury of well-educated medical men would confirm our expression—that the specimen of cream of tartar sent to us for examination would, in many diseases, have caused death, where pure cream of tartar would have been productive of great benefit. Against the fraud of adulteration the retail druggist can guard himself, to a great extent, by constant reference to a good price current. Chemical analysis and fearless exposure of delinquents must accomplish the rest. It remains, then, for our friends to say whether they will be cheated or not. As for our Price Current, it can be depended upon absolutely; and as regards the analysis of spurious samples, and exposure of delinquents, our pages shall be always thrown open for these purposes.

TRICKS OF HOMŒOPATHIC PRACTITIONERS.

AFTER the exposure of homœopathic quackery which has been effected by the various organs of the scientific press, it will be not devoid of utility, as well as interest, to investigate the reasons of the extension of this empiricism—for extending it is undoubtedly, whatever some people may say to the contrary. None can be more alive to the dishonesty of Hahnemannism than ourselves—none more desirous of exposing its practitioners to the contempt they so richly deserve; but, as we cannot be brought to think that quackery will be diminished by ignoring its existence, we are unable to assent to the expression of some of our contemporaries, that globulism is on the decrease.

A history of medicine will disclose the fact that medical delusions have yielded to none—not even to religious delusions, in the fervour of their votaries, and the abnegation of reason which their adoption involves. An analysis of the cause of this would involve a deep psychological scrutiny into some of the most hidden recesses of mental philosophy, which would be out of place in a journal devoted to the chronicling of passing events.

It may be stated generally, however,—and all investigation will result in proving the truth of the statement,—that homœopathic practitioners depend for their success on the ignorance, the superstition, the weaknesses of mankind. They are perfectly well known as individuals, to the regular medical profession, as dishonourable men; who, having found every other source of income fail, assume the occupation of pandering to the prejudices of the laity. Schooled in the trickeries engendered by professional disappointment,

they set aside their professional learning, abandon physic as an honourable profession, and, in opposition to their convictions, practise homœopathy as an art that enables them to derive an ill-gotten wealth by deceiving their dupes.

If there be a credit in deceit, the homœopaths are undoubtedly creditable: if there be a credit in what the world calls finesse, they deserve an equal meed of our praise.

We believe few homœopaths exist who do not know, at least by report, Dr. Quin. This gentleman, we are informed on good authority, administers large doses of castor oil, although, were he honest to the principles of homœopathy, castor oil being a purgative should not enter into his materia medica. Castor oil, Dr. Quin informs his dupes, is an exception to a rule, and the explanation is held to be good. Thus the doctor manages to kill fewer patients, it may be, than his colleagues, because, in reality, he avails himself of a remedy of extensive beneficial application, and thus Dr. Quin helps to keep up his professional reputation—a reputation which he enhances by allowing himself to be made the butt for certain facetious members of the Beaufort family to crack their jokes upon; and, occasionally, we are informed he permits his facetious friends to throw him out of the window of the dining-room for their amusement.

Dr. Epps, we believe, is another homœopathic luminary, a gentleman whose medical career is perfectly well known, from his first *dénouement* as a pork-butcher, to his final high pinnacle of homœopathic glory.

A professional trait of this gentleman is too ingenious to remain unpublished; especially as it may with convenience be adopted by many of our professional brethren who, without being homœopaths, sometimes find the amount of responsibility thrust upon them too great. A gentleman within the circle of our acquaintance, and who was a believer in homœopathy, had the dishonesty of the system made evident to him by the following painful event:—His wife was suffering from puerperal peritonitis,—Dr. Epps was called in,—administered globules and dilutions,—but the lady got suddenly worse. On this the doctor was sent for, *but pressing professional occupations had called the gentleman from home*. He was sent for again and again, but still the stereotyped answer was given—*the doctor is from home*. We need not say the lady died! Whether this is likely to be an exceptional case in the practice of Dr. Epps we leave our readers to judge.

Eminently advantageous as is the system of life assurance, in narrowing that adverse circle of contingencies to which the precarious tenure of life exposes us, we have often felt that the real amount of benefit derivable from that admirable system was restricted to a comparatively small class.

The recipient of a certain salary terminable on his death, a salary on which he was wholly dependent, and on the cessation of which those nearest and dearest to him would be exposed to want, could not, without incurring the hatred of his fellow-creatures, omit so easy and in every way eligible way of drawing on futurity for the means of physical existence as life insurance presents. To an individual thus situated, some very slight curtailment of personal expenditure, some trifling abnegation of luxury, systematically carried out, would in all cases yield the necessary funds for periodically defraying the insurance expenses; and the anxieties attendant upon the prospect of a future of want and pauperism would cease. Thus, it may justly now be said that all who are in possession of an income terminable by death can, if they please, make the provision which

every human, every Christian feeling imposes on civilized men. But there are classes to which this benevolent system has hitherto been scarcely made to apply: classes larger—more intellectual—more powerful—more generally worthy the respect and gratitude of their country and posterity, than those who live by the receipt of incomes changeable only in their advance, stable as the constitution itself, and punctually forthcoming.

All that great and glorious class who by their intellect, whether in the walks of literature, art, or science, revive the faded pictures of past genius, reflect the lineaments of their own age, develop the arcana of nature extending throughout all time and space, poets, philosophers, actors, composers, and all whose physical sustenance depends upon the teeming efforts of their brains, for those, and such as those, the life insurance principle has hitherto been shorn of its major advantages. Punctual payment of the insurance premium has in all cases been made a *sine quâ non* to a participation in the advantages held out, and this punctuality has been for the classes indicated so frequently impossible, that they have, in a large majority of cases, declined to avail themselves of the institution for no other reason.

We have often desired that this imperfection in the life assurance principle might be remedied, and are gratified to remark, that an approach, at least to what we have wished has been achieved by the Athenæum Life Assurance Company, which under certain conditions will not prevent the lapsing of a policy even if the purchases have remained unpaid for a period of five years. Of the constitution of this society we know no more than can be learnt by a perusal of its documents; we are altogether strangers to its management, and have no object in view beyond testifying to the admirable feature which has already been described. We augur much good from this well-advised variation from old insurance practice, and wish the Athenæum Life Assurance Company every success.

SPECIFICATIONS OF CHEMICAL PATENTS.

Charles Frederick Bielefeld, of Wellington-street North, Strand, in the county of Middlesex, papier maché manufacturer, for improvements in the manufacture of sheets of papier maché or substances of the nature thereof. Date of patent, February 24. Date of enrolment, August 24.

In order to render his improvements more clearly understood, the patentee describes the process which has hitherto been adopted in the manufacture of sheets of papier maché. Sheets of papier maché are formed by pasting a number of sheets of paper together until the requisite degree of thickness is obtained the whole is then pressed together, and so treated, as to form one solid and compact mass. In other cases, as when the sheets of papier maché are required of a thin texture, a number of sheets are formed in the paper-mould, and combined whilst they are still in a moist state. The sheets thus formed are then pressed between woollen cloths in a suitable press, whereby the moisture is expelled, and the whole made to adhere in one solid mass.

Another process is that of moulding, by means of which articles are produced in papier maché without being previously formed into sheets. For this purpose the materials of which the paper is composed are reduced to a pulpy state, and then pressed into moulds, the shape and configuration of which they thus obtain.

The patentee's improvements consist in the manufacture of sheets of papier maché by the moulding process, which improvements are also applicable to the manufacture of sheets of any other plastic material of a similar character.

The material preferred by the patentee, for the manufacture of sheets of papier maché suitable for pannels for the cabins of steam-vessels and other similar purposes is prepared as follows:—30 parts of flour are thoroughly mixed and incorporated with 80 parts of water, so as to reduce the mixture to the consistency of paste; 9 parts of alum and 1 of copperas are also added at the same time. To the paste thus formed a mixture of 15 parts of resin, previously dis-

solved by heat, 10 parts of boiled linseed oil, and 1 of litharge, is added; and with the mass thus obtained 60 parts of rag dust are then mixed. Other materials, such as paper-maker's half-stuff or pulp, deprived of so much of its moisture as to render it no longer fluid, may be substituted for the rag dust, but the patentee finds the latter the most economical.

In order to obtain the articles required, the patentee has recourse to the following apparatus:—This apparatus consists of a table, having on either side of it a rack, by which means it is made to traverse backwards and forwards under a roller, which is so supported as to give the requisite degree of pressure to the material, whilst at the same time its duration can be so varied that the amount of pressure may be increased or reduced; or a weighted roller may be used for the purpose. This traversing-table has a wooden frame placed on it, of the thickness of the sheet of material required, a thickness of woollen cloths being placed below it. The composition above mentioned is then spread within the frame of such a thickness as to rise a little above it, and, another cloth being placed on the material, the table is made to traverse backwards and forwards under the roller, by which means the material is consolidated and the sheet rendered of an uniform thickness, which is then removed from the table and dried, either by natural or artificial means, the former being preferred. The sheet thus formed is now immersed in boiled oil; if it is to be used for steam purposes, such immersion to be continued a longer or shorter time according to the thickness; after which it is submitted to the heat of an oven of about 180° Fah. for about 12 or 14 hours, taking care to raise the heat gradually to the proper degree, and also to cool it down gradually before removing the sheets from the oven. The sheets of papier maché thus made will be found to be stronger and more durable than those hitherto manufactured. They may also be painted or ornamented in the usual way, or the natural surface may be varnished and polished, and further ornamented by the addition of suitable colouring matters to the composition whilst in a pulpy state. The patentee states that he does not limit himself to the precise method of carrying out his invention, so long as the peculiar character of the same is retained, which consists in manufacturing sheets of papier maché or similar substances in the manner above described.

Thomas Wieksted, of Old Ford, in the county of Middlesex, civil engineer, for improvements in the manufacture of manure, and in the machinery to be used therein. Date of patent, February 24. Date of enrolment, August 24.

The patentee's improvements in the manufacture of manure relate to its preparation from sewage and other similar matters which contain a large quantity of water, the object being to obtain the manure in a condensed and more portable state. To effect this the patentee adds a quantity of milk of lime in such proportion as will suffice to precipitate the whole of the solid matters contained in the sewage water. The lime is introduced by means of a pipe placed concentric with that through which the sewage matters are delivered, and suitably perforated for that purpose, the supply being regulated by a tap in proportion to the quantity of sewage matters, the whole passing into suitable reservoirs or tanks, in which the solid portions are allowed to deposit. The supernatant liquid is then run off, the solid deposit removed by means of an endless chain of buckets or other suitable means, and placed in a centrifugal machine, for the purpose of removing the moisture still contained in the deposit, and drying it fit for sale.

The construction of this centrifugal machine constitutes the second part of the patentee's improvements. It is much the same as the ordinary centrifugal drying-machine in its general arrangements, and is mounted on a vertical shaft, supported by suitable bearings, and provided with the means of motion. The drum is formed of perforated material, having two surfaces of different diameters, and surrounded by an outer drum of solid material, into which the fluid thrown off from the moist deposit before mentioned is delivered, where it is carried off by suitable arrangements. When completely dried, the solid deposit may be thrown

from the drum without the necessity of suspending its operations.

Some other mechanical arrangements are also mentioned for the purpose of facilitating the operations.

The patentee claims:—First, the manufacture of manure from sewage water or other fluid, by subjecting the same to the action of lime and centrifugal force, as above described. Secondly, thirdly, and fourthly, the construction of centrifugal drying-machines on improved principles. Fifthly, the general arrangements and combination of apparatus for the manufacture of artificial manure, as above described.

Henry Dircks, of Moorgate-street, in the city of London, engineer, for improvements in the manufacture of gas, in gas-burners, and in apparatus for heating by gas. Date of patent, February 24. Date of enrolment, August 24.

The object of the patentee's first improvement in the manufacture of gas is to diminish the quantity of tar produced, and to obtain gas suitable for heat and illumination from the gas-tar obtained in the destructive distillation of coal. This the patentee proposes to effect by intercepting the gas generated in the ordinary manner in its passage from the retorts, and, instead of allowing it to pass from the hydraulic main with the condenser in the usual manner, causing it to traverse a large boiler of heated coal-tar, the vapour of which mixes with the gas. The mixture thus formed is conducted into a retort set in a vertical position in a suitable furnace, and, filled or nearly so, with coke, broken tiles, or other materials broken into small pieces. The contents of this retort having been heated to a state of incandescence, the mixture of gas and vapour of coal-tar before mentioned is conveyed through a suitable opening in the lower part of the retort through the incandescent materials therein contained, and passing out through the upper part of the retort, are thence conducted through another retort similarly charged, when, the vapour of the coal-tar having by this treatment become decomposed and converted into gas, the whole passes off to the ordinary condensers and purifiers, and thence to the gasometers for use.

Another improvement consists in placing in the retort, either separate from the coal or previously mixed with it, any substances possessing absorbent properties, such as coke, broken tile or brick, sawdust, &c., with the view of absorbing the coal-tar produced, and thus preventing its accumulation.

The patentee also describes in his specification various mechanical improvements in the construction of apparatus used in the manufacture of gas, and in the construction of burners.

The patentee's improvements in the burning and consuming of gas, applied to the heating of steam or other boilers, stoves, &c., is thus effected:—The end of the gas-pipe, which is formed with one or more jets, or a number of small orifices, is inserted into another and larger pipe, into which a supply of atmospheric air is also conducted, the quantity admitted being regulated by a suitable contrivance. The mixture of gas and atmospheric air thus obtained issues through the end of the larger pipe, which is provided with a number of small perforations, and, being lighted, the requisite heat is thus obtained.

The patentee claims the process of intercepting the gas in its passage from the hydraulic main of the gas apparatus, causing it to mix with the vapour of heated coal-tar, and, passing the mixture through suitable materials in an incandescent state, placed in retorts or other closed vessels. Also the arrangement above mentioned for absorbing and preventing the accumulation of coal-tar in the manufacture of gas; various improvements in the construction of gas apparatus and burners; and lastly, the method described of effecting the combustion of coal-gas for the production of heat.

BLACKING FOR DRESS BOOTS AND SHOES.—1. Gum arabic 4 oz., treacle 1 oz., ink $\frac{1}{2}$ pint, vinegar and spirits of wine, of each 1 oz. Dissolve the gum and treacle in the ink and vinegar, then strain, and add the spirit.—2. To the above add,

incorporating well, 1 oz. of olive oil, and $\frac{1}{2}$ oz. of lampblack.—3. Beat well together the whites of 2 eggs, a tablespoonful of spirits of wine, a lump of sugar, and a little powdered ivoryblack. The first two preparations are applied to the leather by the tip of the finger or a sponge, and allowed to dry, dust being carefully prevented from depositing, and are only adapted for clean dry weather, or for indoor. The last is laid on and polished with a brush, and then left a few hours to harden. It may also be used to revive the faded or worn leather of old chairs. They all possess great brilliancy.

Blackening for harness is made by mixing together 2 oz. of mutton suet with 6 oz. of beeswax, adding 6 oz. of sugar-candy, 2 oz. of soft soap dissolved in water, and 1 oz. of finely-powdered indigo; when melted and well mixed, a gill of turpentine is to be added. Lay it on the harness with a sponge, and polish off with a brush.

BLACKING FOR BOOTS AND SHOES (LIQUID).—Take ivory-black in powder, 1 lb. treacle $\frac{1}{2}$ lb., olive oil 2 oz., beer and vinegar, of each 1 pint. Rub together the first three until the oil is perfectly incorporated, then add the beer and vinegar.—*Another.* Take ivoryblack and treacle, of each 1 lb.; sweet oil and sulphuric acid, of each $\frac{1}{2}$ lb. Mix the first three as before, then gradually add the vitriol diluted with three times its weight of water; mix well, and let it stand for three hours, then finally reduce to a proper consistence by water or sour beer.—*Another.* Take ivoryblack and treacle, of each $\frac{1}{2}$ lb.; oil of vitriol 1 oz., olive oil 2 oz., sour beer 1 pint. Treat as above.—*Another.* Take of ivoryblack 3 cwt., treacle 2 cwt., linseed oil 3 gallons, sulphuric acid 20 lb., water q. s. as last.

PASTE BLACKING.—1. Treacle 1 lb., ivoryblack $1\frac{1}{2}$ lb., olive oil 2 oz.; incorporate all by rubbing; then add a little lemon juice or vinegar.—*Another.* Ivoryblack 2 lb., treacle 1 lb., olive oil and oil of vitriol, of each, $\frac{1}{2}$ lb.; water q. s. as before.—*Another.* Ivoryblack 28 lb., treacle 21 lb., common oil 1 quart, sulphuric acid 3 lb., water q. s.—*Another.* Ivory-black 3 cwt., common treacle 2 cwt., linseed oil and vinegar dregs, of each 3 gallons, sulphuric acid $\frac{1}{2}$ cwt., water q. s.

The manipulations required for paste and liquid blacking are the same, the difference in the two being the quantity of liquid added. Thus, by diluting paste blacking with water or beer dregs, it may be converted into liquid blacking of similar quality, and by using less fluid matter the ingredients of liquid blacking will produce paste blacking. The operator should always bear well in mind that the ivoryblack used for liquid blacking must always be reduced to a much finer powder than for paste blacking. If this precept be not attended to the ivoryblack will subside to the bottom, and will be diffused again through the liquid with difficulty. For those persons who do not like the use of blacking containing oil of vitriol, the first of the preceding forms may be employed. The brilliancy of blacking is, however, greatly increased by the addition of oil of vitriol, and this substance is not so injurious to leather as is commonly imagined, on account of its partial neutralization by the calcareous portions of the ivoryblack. For this reason lampblack should not be employed instead of ivoryblack, because it does not contain any base wherewith the acid may be neutralized. The addition of white of eggs, isinglass, gum arabic, &c., to blacking is decidedly injurious. These articles tend to stiffen the leather and make it crack.

Bone manure is made by grinding the bones to a coarse powder in a mill, and sowing them with the seed in a drill. It is said that, when thus treated, yields 30 to 50 per cent. more in weight of straw and grain than by the common methods. It is usually applied to light turnip soils, which it renders more than ordinarily productive. Bone manure is much used in the west of Yorkshire, Holderness, and Lincolnshire. The usual quantity per acre is 70 bushels when used alone, but when mixed with ashes as common manure 90.

PLATE POWDER.—1. Quicksilver with chalk 1 oz., prepared chalk 7 oz. Mix.—2. Polisher's putty and burnt hartshorn, of each $\frac{1}{2}$ lb., prepared chalk 1 lb.

SAPON. MIO.—5 lbs. sapon. moll.; $\frac{1}{2}$ lb. ol. olive com.; $2\frac{1}{2}$ lbs. sulph. mig.; 1 lb. soot or lampblack.

PRICE CURRENT OF DRUGS, &c.

Articles having bd. or bond annexed are sold at short price exclusive of duty; when no duty is affixed the article is free. Add 5 per cent. to the duty on all articles excepting those having an asterisk prefixed. F. means foreign; B.P. British possessions.

DRUGS, &c.		Price.	
		£. s. d.	£. s. d.
ALKANET ROOT cwt.	1 14 6	2 10 0	
ALOE, Barbadoes	1 10 0	6 0 0	
Hepatica	1 10 0	5 0 0	
Cape	1 5 0	1 15 0	
ALUM, British ton	7 10 0	8 5 0	
Roch cwt.	1 0 0	1 4 0	
AMBERGRIS, Grey oz.	4 8 0	7 0 0	
ANCHOVIES dble. brl.	17 0 0	18 0 0	F. 2d. per lb.
ANGELICA ROOT cwt.	1 0 0	1 5 0	
ANNATTO, Flag lb.	1 0 0	1 2 0	
Roll	0 10 0	1 0 0	
ANTIMONY, Crude cwt.	1 8 0	0 0 0	
Ore ton	12 0 0	0 0 0	
Regulus Cpe. cwt.	2 4 0	3 0 0	
Rowls	2 15 0	2 13 0	
ARROW ROOT lb.	0 3 0	1 0 0	B. P. 6d. F. 2s.
ARSENIC, White cwt.	17 0 0	18 0 0	
Red	0 0 0	0 0 0	
English White	12 6 0	1 0 0	
Yellow	19 0 0	1 0 0	
ARGOL, Bologna cwt.	2 0 0	2 12 0	
Florence White	2 0 0	2 8 0	
Red	2 0 0	2 5 0	
Naples White	1 18 0	2 5 0	
Red	1 12 0	1 13 0	
Sicily White	1 8 0	1 16 0	
Red	1 8 0	1 10 0	
French	1 14 0	2 7 0	
Cape	1 15 0	2 11 0	
ASPHALTUM, Egyptian	2 10 0	4 15 0	
BORACIC ACID cwt.	2 12 0	2 13 0	
BALSAM, Canada lb.	0 2 0	1 0 0	
Capavi	0 10 0	1 2 0	
Peru	5 6 0	6 0 0	
Tolu	3 6 0	4 0 0	
BARILLA, Spanish ton	0 0 0	0 0 0	
Ieneriffe	0 0 0	0 0 0	
Sicily	0 0 0	0 0 0	
East India	0 0 0	0 0 0	
BARK, Peruvian, pale .. lb.	1 6 0	2 6 0	
Good	0 0 0	2 0 0	
Mid., do.	1 1 0	1 2 0	
Crown	1 3 0	2 2 0	
Yellow, Flat	3 0 0	4 6 0	
Quill	2 0 0	6 5 0	
Red, Flat	7 0 0	0 0 0	
Quill	3 0 0	4 6 0	
Cascarilla cwt.	1 0 0	1 15 0	
Quercitron	8 6 0	9 6 0	
Oak, English....per load	13 0 0	14 0 0	
Foreign....per ton	3 0 0	6 5 0	
New S. W.	5 0 0	8 0 0	
BERBERIS, Bay cwt.	12 6 0	1 6 0	
Juniper, Italian.. ..	7 6 0	8 0 0	
German	8 0 0	12 0 0	
Turkey, Yellow	3 15 0	6 0 0	
Perlas, do.	8 0 0	14 0 0	
BLACK LEAD, E. I. .. cwt.	5 0 0	1 6 0	
Malaga	10 0 0	1 5 0	
German	1 0 0	1 3 0	
Dust	2 9 0	12 0 0	
BORAX OR TINCAL .. cwt.	2 0 0	0 0 0	
E. I. Redned	2 17 0	2 18 0	
English Refined	3 10 0	3 12 0	
BRIMSTONE, Rough.. .. ton	8 10 0	9 5 0	
Roll	12 0 0	0 0 0	
CAMPHOR, Unrefined .. cwt.	3 7 6	3 10 0	
Dutch	3 10 0	0 0 0	
* Refined lb.	1 0 0	1 1 0	5s. per cwt.
CANTHARIDES, bd.	3 0 0	3 6 0	3d. per lb.
CAFFEE, French cwt.	7 0 0	12 0 0	6d. "
Capotts	6 0 0	7 10 0	3d. " B.P.
CARDAMOMS, Malabar .. lb.	2 6 0	3 0 0	
Long Longs.. ..	3 0 0	3 4 0	
Ceylon	1 3 0	1 5 0	
CASTOR OIL, America .. lb.	0 0 0	0 0 0	
E. I., bd.	0 3 0	0 5 0	
CHILIES, E. I. cwt.	15 6 0	1 5 0	6d. per lb.
CHINA ROOT cwt.	10 0 0	1 0 6	
COCHINEAL, Honduras Black .. lb.	3 7 0	4 10 0	
Silver	2 10 0	3 9 0	
Mexican Black	3 3 0	3 9 0	
Silver	2 11 0	3 4 0	
COBALT lb.	0 0 0	0 0 0	
COCULUS INDICUS .. cwt.	1 0 0	1 7 0	

DRUGS, &c., continued.		Price.	
		£. s. d.	£. s. d.
COFFEE, Jamaica, triage and ord.	1 13 0	2 18 0	B. P. 4d. F. 6d. per lb.
good and fine ord.	2 0 0	2 6 0	
low to good middling	2 8 0	3 10 0	
fine middling & fine	3 12 0	4 10 0	
Demerara, triage & ord.	0 0 0	0 0 0	
good and fine ord.	0 0 0	0 0 0	
low to good mid.	0 0 0	0 0 0	
Berbice, triage and ord.	0 0 0	0 0 0	
good and fine ord.	0 0 0	0 0 0	
low to fine middling	0 0 0	0 0 0	
Dominica and St. Lucia, triage and ordinary	0 0 0	0 0 0	
good and fine ord.	0 0 0	0 0 0	
low to good middling	0 0 0	0 0 0	
Ceylon, ordinary to very good ord. native	1 18 0	2 0 0	
fine ord. to mid. plu.	2 4 0	2 14 0	
good mid. to fine do.	2 16 0	3 15 0	
Mocha, ord. & ungarbled	2 0 0	2 10 0	
clean garbled ..	3 8 0	3 15 0	
fine	3 16 0	4 8 0	
Sumatra, Padang, &c. ..	1 17 0	2 0 0	
Java	2 4 0	3 0 0	
Mysore with certificate	1 19 0	2 10 0	
Brasil, ord. to fine ord.	1 15 0	1 18 0	
ex. fine plant. kind	2 0 0	2 15 0	
St. Domingo	1 17 0	1 19 0	
Havannah, ord. to g. ord.	1 18 0	2 0 0	
fine ord. to mid.	2 2 0	3 10 0	
Cuba, ord. to good ord.	1 18 0	2 2 0	
fine ord. to middling	2 4 0	2 15 0	
Porto Rico	1 18 0	2 10 0	
La Guayra	1 18 0	2 12 0	
Costa Rica	2 0 0	2 12 0	
COCOA, Trinidad, red ..	3 3 0	3 14 0	B. P. 1d. F. 2d. per lb.
grey	1 18 0	2 2 0	
Grenada	1 15 0	2 3 0	
Para, St. Domingo, and Bahia	1 10 0	1 9 0	
Guayaquil	1 7 6	1 11 0	
COLOCYNTH, Turkey .. lb.	0 6 0	1 2 0	
Spanish	0 11 0	1 6 0	
COLOMBO ROOT	2 16 0	2 19 0	
COFFERAS, Green, bc. .. ton	10 0 0	2 15 0	
Blue	2 8 0	1 10 0	
CREAM TARTAR, French ..	2 18 0	3 8 0	
Venetian	3 5 0	3 8 0	
CUBERS cwt.	4 0 0	5 0 0	
CUTCH	1 0 0	1 0 6	
DRAGON'S BLOOD .. lump	3 10 0	9 15 0	
Reed	8 0 0	14 10 0	
DYEWOODS: Brasil ton	45 0 0	80 0 0	
Barwood, Angola	0 0 0	0 0 0	
Camwood	13 15 0	28 15 0	
Fustic, Brasil	0 0 0	0 0 0	
Cuba	8 10 0	9 0 0	
Jamaica	5 0 0	5 10 0	
Spanish	4 0 0	4 10 0	
Zante	0 0 0	0 0 0	
Logwood, Campeachy ..	6 10 0	6 15 0	
Honduras	5 0 0	5 10 0	
Jamaica	3 10 0	4 0 0	
St. Domingo	4 0 0	5 0 0	
Nicaragua, Lima	14 0 0	15 0 0	
solid	12 0 0	17 0 0	
small and mid.	6 10 0	12 0 0	
Red Sanders ton	4 15 0	5 15 0	
* ESSENTIAL OILS			
Cloves, bd. lb.	2 8 0	5 4 0	s. per lb.
Caraway	3 6 0	7 0 0	
Lavender	4 0 0	11 0 0	
Peppermint, bd.	4 0 0	0 0 0	
Spike	5 5 0	5 6 0	
Aniseed, bd. lb.	9 6 0	10 0 0	
Cassia, bd.	0 3 0	0 4 0	
Cayaput, bd. oz.	0 10 0	2 6 0	
Cinnamon, bd.	0 3 0	0 5 0	
Mace (expd.), bd.	0 4 0	0 5 0	1s. per lb.
Nutmegs, bd.	2 0 0	2 9 0	
Bergamot	8 6 0	8 9 0	
Lemon	6 9 0	7 0 0	
Orange	1 8 0	2 6 0	
Rosemary	2 9 0	3 0 0	
Thyme	13 6 0	1 0 0	
Otto Roses oz.	1 5 0	0 0 0	
Almonds lb.	14 0 0	1 4 0	
GALANGAL ROOT, bd. .. cwt.	4 0 0	4 10 0	
GALLS, sorts	2 15 0	3 10 0	
Green or White	4 12 0	5 0 0	
Blue	3 10 0	5 0 0	
E. I. Blue bd.	1 1 0	1 3 0	
GENTIAN ROOT cwt.	1 5 0	1 0 0	
GLUE, Best Town cwt.	0 0 0	0 0 0	
Interior	1 10 0	2 5 0	
Foreign	2 5 0	0 0 0	5s. per cwt.
GUINIA GRAINS, bd. ..			

DRUGS, &c., continued.		Price.			
		£.	s.	d.	q.
GUTTA PERCHA lb.		0	10	0	0
GUMS:					
Ammoniac, Lp. .. .cwt.		9	6	0	1 10 0
Drop		1	15	0	0 3 15 0
Arabic, E. I.		1	0	0	0 4 12 0
Cape		12	0	0	1 2 0 0
Turkey, fine		8	10	0	0 10 0 0
2nds and 3rds		3	5	0	0 6 0 0
Australian		1	17	0	0 2 0 0
Barbary, Brown		1	15	0	0 2 10 0
White		3	5	0	0 2 15 0
Gedda		5	0	0	0 6 0 0
ANIMI, washed		3	0	0	0 11 10 0
scraped		6	0	0	0 12 0 0
Copal lb.		0	6	0	0 2 8 0
ASAFETIDAcwt.		10	0	0	0 4 10 0
BENJAMIN, 3rds		4	0	0	0 9 10 0
1st and 2nds		10	0	0	0 35 0 0
DAMMAR		1	10	0	0 1 18 0
GAMBOGE		5	0	0	0 11 12 0
GALBANUM		2	10	0	0 3 0 0
GUAIACUM lb.		0	6	0	0 1 0 0
MYRRH, E. I. .. .cwt.		2	0	0	0 10 0 0
MASTIC lb.		3	0	0	0 6 6 0
OLIBANUMcwt.		10	0	0	0 3 14 0
SANDRACH		2	6	0	0 3 10 0
SENEGAL, garbled		3	0	0	0 4 10 0
TRAGACANTH, Picked		13	0	0	0 16 0 0
Sorts		4	6	0	0 10 0 0
LAC, Sticklac, Bengal		2	17	0	0 1 15 0
Siam, &c.		2	10	0	0 3 8 0
Shellac, Liver .. .cwt.		2	5	0	0 2 5 0
Ruby		2	5	0	0 2 10 0
Orange		2	5	0	0 2 18 0
Block		1	1	0	0 2 5 0
Blood		2	0	0	0 2 8 0
Seedlaccwt.		1	0	0	0 2 0 0
HELLBORN ROOT .. .cwt.		1	18	0	0 0 0 0
HONEY, Fine		1	8	0	0 3 0 0
ISLAND MOSS lb.		0	2 1/2	0	0 0 2 0
INDIA RUBBER, solid		0	8	0	0 0 9 0
bottles		1	0	0	0 1 8 0
small		1	2	0	0 2 6 0
INDIGO lb.		4	2	0	0 4 7 0
Bengal, fine blue		6	0	0	0 6 4 0
good and fine violet and purple		5	6	0	0 3 9 0
ordinary and middling		4	7	0	0 5 0 0
good and fine copper		5	4	0	0 5 8 0
ordinary and middling		3	2	0	0 5 0 0
Consumers, good and fine		4	8	0	0 5 2 0
ordinary and middling		3	2	0	0 4 6 0
Java, good and fine		4	3	0	0 6 8 0
Oude, good and fine		3	3	0	0 4 6 0
ordinary and middling		2	2	0	0 3 2 0
Madras, good and fine		3	1	0	0 4 3 0
ordinary and middling		1	9	0	0 3 0 0
Kurpah, good and fine		3	6	0	0 5 6 0
ordinary and middling		2	0	0	0 3 5 0
Manilla good and fine					Withdrawn.
ordinary and middling					
IPRACUANHA lb.		5	0	0	0 5 6 0
ISINGLASS LEAF, 1st sort		10	0	0	0 13 6 0
2nd sort		9	0	0	0 10 0 0
Simovia		2	0	0	0 2 9 0
Siberia Furze		5	0	0	0 6 0 0
Short Staple, 1st		8	0	0	0 14 0 0
Long ditto		10	0	0	0 14 0 0
ISINGLASS, Brazil		0	6	0	0 5 6 0
JALAP lb.		1	4	0	0 2 2 0
JUICE OF LEMON gal.		0	10	0	0 1 0 0
LAC DYE, Fine lb.		1	8	0	0 2 4 0
Good		1	2	0	0 1 5 0
Middling		1	0	0	0 1 2 0
Ordinary		0	5	0	0 0 11 0
Lake		0	3	0	0 0 8 0
LIQUORICE Paste, Ital. .. .cwt.		3	5	0	0 3 12 6
Block		4	0	0	0 5 15 0
MADDERS, Dutch Crop .. .cwt.		2	6	0	0 2 10 0
Ombro		2	2	0	0 2 5 0
Gamene		1	5	0	0 1 10 0
Mull		8	0	0	0 12 6 0
French		0	0	0	0 0 0 0
Spanish		1	10	0	0 2 0 0
MADDER ROOTS, Turkey		1	6	0	0 1 10 0
MAGNESIA, English		2	0	0	0 2 2 0
MANNA, Flakey lb.		3	0	0	0 3 6 0
Sicily		1	0	0	0 1 6 0
MUNJERT, E. I. .. .cwt.		18	0	0	0 1 2 0
METALS:					
IRON BRT. Cakes ton		84	0	0	0 0 0 0
Tile		83	0	0	0 0 0 0
Sheets lb.		0	2 1/2	0	0 0 0 0
Bottoms		0	10 1/2	0	0 0 0 0
Old		0	2 1/2	0	0 0 0 0
S. American ton		86	0	0	0 0 0 0
Foreign Cakes		0	0	0	0 0 0 0
Foreign Tile		0	0	0	0 0 0 0

B.P. 5 F. 10s.

Public Sale Prices.

F 1 0 0 cwt.
B.P. 10 0 cwt.

per cwt. un-
wrought 4s.
B.F. 8s. 9d. F.
wrought B.P.
5s. F. 10s. old
B.F. 8s. 6d.
old F. 7s. 6d.

DRUGS, &c. continued.		Price.			
		£.	s.	d.	q.
IRON, British Bars		5	2	0	0 5 10 0
Rods		6	5	0	0 6 15 0
Hoops		7	0	0	0 7 10 0
Sheet		7	15	0	0 8 5 0
Cargo in Wales Bars		4	10	0	0 8 0 0
Pigs No. 1 Wales		3	0	0	0 4 0 0
No. 1 Clyde		1	19	0	0 2 0 0
Russian C.C.N.D.		0	0	0	0 0 0 0
P.S.I.		0	0	0	0 0 0 0
Archangel		0	0	0	0 0 0 0
Swedish		11	10	0	0 12 10 0
LEAD, British:					
Pigs ton		16	15	0	0 0 0 0
Sheet milled		18	0	0	0 18 5 0
Shot Pat.		19	10	0	0 20 10 0
Red or Minium		18	10	0	0 19 0 0
White		22	0	0	0 25 0 0
Litharge		19	0	0	0 0 0 0
Pig Spanish		0	0	0	0 0 0 0
American		0	0	0	0 0 0 0
STEEL, English					
Swedish Keg		14	10	0	0 0 0 0
Faggot		15	10	0	0 0 0 0
TIN, Blocks					
Ingots		4	4	0	0 0 0 0
In Bars		4	10	0	0 0 0 0
Banca bd.		4	0	0	0 0 0 0
Straits bd.		4	0	0	0 0 0 0
Peruvian bd.		0	0	0	0 0 0 0
Plates, p. bx. of 25 Sheets:					
No. 1 C 13 1/2 by 10 in. ..		1	5	0	0 1 5 6
1 X		1	13	0	0 1 13 6
1 XX		0	0	0	0 0 0 0
SPELTER on the spot ton		14	5	0	0 0 0 0
Delivery		14	5	0	0 0 0 0
ZINC, English Sheet		21	0	0	0 0 0 0
FLATINA ONE oz.		0	0	0	0 0 0 0
OSIDEW lb.		0	0	0	0 0 0 0
MUSK, good and fine oz.		10	0	0	0 1 5 0
NUX VOMICA, bd. .. .cwt.		7	6	0	0 9 6 0
OILS—Imperial measure:					
Olive, Florence, 1/2 chest ..		15	0	0	0 18 0 0
Lucca, jars		5	0	0	0 41 0 0
Gallipoli, 288 gls. ..		40	0	0	0 41 10 0
Spanish, ditto		38	0	0	0 39 10 0
Linseed cwt.		1	12	6	0 0 0 0
Rape, Pale		1	12	6	0 1 15 0
Brown		1	12	0	0 1 13 0
Cod tun.		36	10	0	0 0 0 0
Seal, Pale		34	10	0	0 0 0 0
Brown, yel., and straw ..		31	0	0	0 34 0 0
Sperm		84	0	0	0 85 0 0
Head Matter		90	0	0	0 96 0 0
Whale, Greenland		31	0	0	0 33 0 0
South Sea		1	10	0	0 1 14 6
Cocoa Nutcwt.		27	10	0	0 28 0 0
Palmcwt.		3	0	0	0 4 0 0
OLIVES, French 1/2 baris .. 2 gals		9	0	0	0 10 0 0
Spanish, keg 2 galls. ..		10	6	0	0 14 0 0
OPIMUM, Turkey, bd lb.		7	6	0	0 8 6 0
Egyptian		35	0	0	0 0 0 0
ORCHELLA, Angola ton		25	0	0	0 35 0 0
Cape de Ver.		30	0	0	0 0 0 0
MADEIRA		0	0	0	0 0 0 0
ORPIMENT, K. India		0	8	0	0 0 0 0
ORANGE FLOWER water lb.		5	0	0	0 0 0 0
Peel		1	18	0	0 2 2 0
ORRIS ROOTcwt.		0	6	0	0 0 0 0
PELLITORY ROOT lb.		0	5	0	0 0 8 0
PINK ROOT lb.		5	6	0	0 0 0 0
PITCH, British .. .cwt.		7	6	0	0 0 0 0
Archangel		12	0	0	0 0 0 0
Stockholm		0	0	0	0 0 0 0
Burgundycwt.		5	0	0	0 8 0 0
PUMICSTONE, sorts ton		8	0	0	0 12 0 0
QUASSIAcwt.		3	4	0	0 3 6 0
QUICKSILVER lb.		0	5	0	0 0 8 0
RHATANIA ROOT lb.		0	6	0	0 3 3 0
RHUBARB, round		0	8	0	0 3 3 0
Flat		2	6	0	0 3 9 0
Dutch, trimd.		10	0	0	0 12 0 0
Russian		1	0	0	0 1 6 0
SACCHARUM SATURNI, bd. .. lb.		18	0	0	0 18 6 0
SAFFRON, Spanishcwt.		19	0	0	0 1 4 0
*SAGO common		14	0	0	0 15 0 0
Pearl		1	10	0	0 1 13 0
SAGO FLOUR		1	18	0	0 0 0 0
SAL AMMONIAC, E. I. .. .cwt.		6	6	0	0 7 0 0
English, Refined		6	0	0	0 6 0 0
SALTS, Glauber		18	15	0	0 14 5 0
Epsom		0	10	0	0 1 3 0
SALEP		0	10	0	0 1 6 0
SARSAPARILLA, Brazil lb.		0	10	0	0 0 0 0
Honduras		0	10	0	0 0 0 0

6 0
0 0B.

10 per cwt.

5 0 p. cwt.

2 0 2 0 gall.
0 1 0 p. lb.

DRUGS, &c., continued.		Price.		DRUGS, &c., continued.		Price.	
		£. s. d.	£. s. d.			£. s. d.	£. s. d.
SARSAPARILLA, Vera Cruz		0 4 @	0 5	TALLOW:			
Jamaica ..		1 6 @	2 3	Graves ..		9 0 @	0 0
SASSAPARIL ROOT ..	ton	10 0 @	12 0 0	Good Dregs ..		6 0 @	0 0
SAFFLOWER, E. I. ..	cwt.	3 10 0 @	7 10 0	PRICES OF CANDLES, per doz.:			
Bombay ..		1 0 0 @	2 0 0	Mould Candles ..		6 0 @	7 0
SHUMAC, Malaga ..	cwt.	12 0 @	13 6	Store ditto ..		4 6 @	5 6
Sicily ..		14 6 @	15 0	TAMARINDS, West Ind. ..	cwt.	1 10 0 @	2 10 0
Triste ..		4 6 @	6 6	East Ind., bd.		13 0 @	16 0
SALTPETRE, Rough ..		1 5 0 @	1 9 0	*TAPIOCA ..	lb.	0 1 1/2 @	0 4 1/2
British, Refined ..		1 9 0 @	1 9 6	TEA: bd.			
Nitrate of Soda ..		14 9 @	15 0	Bohea, Canton, & Woping		0 6 @	0 7
British, Refined ..		0 0 @	0 0	Fokien ..		0 0 @	0 0
SCAMMONY, Smyrna ..	lb.	5 0 @	7 0	Congou, ordinary and out			
Aleppo, Sds ..		10 0 @	15 0	of condition ..		0 9 1/2 @	0 9 1/2
Sue ..		1 8 0 @	1 15 0	good ordinary ..		0 10 @	0 10 1/2
SEEDS, Aniseed ..	cwt.	2 2 0 @	3 5 0	mixed blackish leaf ..		0 10 1/2 @	0 10 1/2
German ..		2 2 0 @	2 5 6	rather blackish leaf ..		0 11 @	0 11 1/2
E. I. Star ..		3 5 0 @	3 10 0	blackish leaf ..		0 11 1/2 @	1 0
Cummin ..		2 15 0 @	3 10 0	ditto rather strong to			
Caraway, Foreign ..		19 0 @	1 10 0	strong ..		1 0 1/2 @	1 1
JANEKA ROOT ..	lb.	0 6 @	1 0	Pekoe kind and flavour		1 1 1/2 @	1 6
GENNA, Alexandria ..	lb.	0 2 @	0 6	Ning Yung, fair to fine		0 11 @	1 6
Smyrna ..		0 0 @	0 0	Pouchong ..		0 9 @	1 0
East India ..		0 1 @	0 5	Caper, chests ..		0 0 @	0 0
Tinnevely ..		0 8 1/2 @	1 4	do, in 10 lb. Catty boxes		0 11 @	1 6
SMALTS, Saxon, FFPE ..	lb.	1 2 @	0 0	Campol, common ..		0 9 @	0 0
Danish, FFPE ..		1 7 @	0 0	good to fine ..		0 0 @	0 3
FFPE ..		1 2 @	0 0	Seuchong, ordinary to good		0 9 1/2 @	1 2
FFPE ..		1 2 @	0 0	fine ..		1 4 @	2 0
SNAKE ROOT ..	lb.	0 4 @	0 8	Flowery Pekoe, flat ..		1 0 @	1 3
SOAP, Naples, soft ..	cwt.	1 6 @	1 9	fair to fine ..		1 6 @	2 3
Casile, hard ..		3 0 0 @	0 0	very fine and flowery ..		2 4 @	3 0
British, Mottled ..		2 2 0 @	2 4 0	Black leaf Pekoe or Hong			
Yellow ..		1 18 0 @	2 2 0	Mus ..		0 10 @	1 4
White ..		2 14 0 @	0 0	Orange Pekoe, faint & odd		0 11 @	0 11 1/2
Scented ..		0 0 @	0 0	common to fine plain ..		1 0 @	1 1
Windsor ..		0 0 @	0 0	common to fine scented		1 1 @	1 9
Oil ..		0 0 @	0 0	Twankay, common ..		0 10 @	0 11
Soft B. B. ..		1 0 0 @	0 0	good ..		1 1 1/2 @	1 1 1/2
B. S. ..		0 0 @	0 0	fine to Hyson kind ..		1 2 @	1 3
B. ..		0 0 @	0 0	Hyson Skin, common ..		0 10 @	0 11
SODA ..	ton.	6 10 0 @	0 0	good to fine ..		1 0 @	1 2
ASHES, Canada ..	Pot 1st. cwt.	1 10 6 @	1 11 0	Hyson, common ..		1 1 @	1 3
Pearl 1st ..		1 9 0 @	0 0	fair to good ..		1 4 @	1 10
United States Pot ..		0 0 @	0 0	fine ..		2 0 @	2 6
Pearl ..		0 0 @	0 0	extra fine ..		2 10 @	3 10
Sox, bd. ..	gallon	4 0 @	4 4	Young Hyson, common ..		0 8 1/2 @	1 1
SPICES—				good to fine ..		1 2 @	2 7
Cassia Lignea, ord. to mid.		6 0 0 @	6 2 6	Imperial, common ..		1 2 @	1 4
good to fine ..		6 2 6 @	6 5 0	good to fine ..		1 5 @	2 6
Cassia Buds ..		5 12 0 @	5 15 0	Gunpowder, common ..		0 8 @	1 7
Cinnamon, Ceylon, 1st quality		1 6 @	3 4	good to fine ..		1 9 @	4 0
3d ..		1 0 @	3 4	TURMERIC, Bengal ..	cwt.	16 0 @	17 0
Malabar ..		0 8 @	1 10	Java ..		10 0 @	13 0
Tellicherry ..		0 8 @	1 10	Madras ..		10 0 @	14 6
Cloves, Amboyna ..		0 8 @	0 10	TERRA JAPONICA ..	cwt.	14 6 @	0 0
Bourbon & Zanzibar ..		0 5 1/2 @	0 6 1/2	Sienna ..		1 2 @	1 4
Penang ..		0 10 @	1 2	VALONIA, Smyrna ..	ton	16 0 @	17 0
Ginger, Bengal ..		13 0 @	2 10 0	Picked Morea ..		13 0 @	14 0
Malabar ..		17 0 @	3 8 0	VANILLAS, Brazil ..	lb.	10 0 @	2 13 6
Jamaica ..		2 5 0 @	10 0 0	Vera Cruz ..		1 5 0 @	1 10 0
Barbadoes ..		0 0 @	0 0	VERDIGRIS, Foreign ..		0 9 @	0 10
Mace ..		1 10 @	2 7	English ..		1 3 @	0 0
Nutmegs, brown ..		2 0 @	3 9	VERMILION, China ..	lb.	4 0 @	4 2
lined ..		1 4 @	3 0	English ..		5 0 @	0 0
Pepper, bd. Malabar, heavy shot		0 3 1/2 @	0 3	VITRIOL, blue ..		1 8 0 @	1 10 0
light and half heavy ..		0 3 1/2 @	0 3 1/2	Foreign, white ..		14 0 @	0 0
Eastern ..		0 3 @	0 3 1/2	English, ditto ..		1 4 0 @	1 5 0
white ..		0 5 1/2 @	0 10 1/2	Oil of ..		0 1 @	0 9
long ..		0 0 @	0 0	WAX, Mogadore ..	cwt.	5 17 6 @	6 10 9
Pimento ..		0 4 1/2 @	0 5	American ..		5 5 0 @	0 0
SPONGE, fine ..	lb.	9 0 @	1 5 0	Russian ..		7 10 0 @	0 0
ordinary ..		1 0 @	7 6	Hambro' ..		7 12 6 @	8 0 0
SPIRITS OF TURPENTINE ..	cwt.	1 14 0 @	1 15 6	East India ..		5 10 0 @	9 0 0
SULPHATE OF QUININE ..	oz.	11 9 @	12 0	African ..		5 0 0 @	7 0 0
SQUILLS, dry ..	lb.	0 1 @	0 2	White Hambro' ..		7 0 0 @	8 10 0
undried ..		0 0 @	0 0	English ..	cwt.	2 0 0 @	9 15 0
SPERMACEIN, English ..	lb.	1 4 @	1 5	Cape ..		5 15 0 @	6 15 0
American ..		0 0 @	0 0	West India ..		0 0 @	7 0 0
STARCH, English ..		2 6 0 @	2 12 0	WELD ..	load	0 0 @	0 0
Irish ..		0 0 @	0 0	WOOD ..	ton	0 0 @	0 0
POTATO FARINA ..		14 6 @	15 6	WOOD, Sapan Bimas		1 0 0 @	1 15 0
TALLOW:				Siam ..		8 0 0 @	1 0 0
Petersburg, new ..	cwt.	1 18 6 @	1 19 0				
old ..		1 17 0 @	1 18 0				
Delivery last three months		1 18 9 @	1 19 0				
South American ..		1 15 0 @	1 17 6				
Odessa Sheep ..		0 0 @	0 0				
North American ..		0 0 @	0 0				
Australian ..		1 15 0 @	1 17 0				
Town Tallow ..	cwt.	1 19 0 @	0 0				
Fat by ditto ..		3 1 @	0 0				
Russian Candle ..		1 19 0 @	0 0				
Melted Stuff ..		1 9 0 @	0 0				
Rough ditto ..		18 0 @	0 0				

NITRATE OF IRON.—1. Rusty nails, 2 oz.; nitrous acid, 3 oz.; water, 5 pints.

2. Six or eight ounces of nitrous acid poured upon old nails must make five pints with boiling water. Before adding the water, neutralize the acid with the oxidated metal.

BLACK STRAP.—Succ. glyemb., aloes socot, sodæ subc., aa, 3ij.; aq. Hiv.

CORN PLASTER.—Erug. erig., 3ij.; tereb. 3ij.; ceræ. flav. 3ij.; picis. burg., 3iv.

PUBLIC SALES OF DRUGS.

September 4th.—By T. MERRY AND SON.—87 cases Gamboge, £6 7s. 6d. to £12 10s., part sold; 8 serons Yellow Bark (part dam.), 4s. 1d. to 5s.; 15 barrels Balsam Capivi, 1s. 1d. to 1s. 2d., sold; 5 casks Gum Copal, 69s., bought in; 28 cases Benjamin, £6 5s. to £6 10s., part sold; 10 casks Australian Gum, 39s., bought in; 35 bags Sticklac, 24s.; 3 cases Gum Animi, 24s., bought in; 2 packages Brasil Ising-glass, 11d. to 1s., sold; 6 bales Senna, 1d.; 3 boxes Ex-pressed Oil Mace, 1½d., bought in; 4 ditto Opium, 7s. 3d. to 10s., sold; 21 packages Extract Logwood, 4½d. to 5d., bought in; 11 casks Brown Barbary Gum, out; 1 ditto Amrad Gum, out.

By HERBERT DALTON.—164 cases 10 casks Castor Oil, middle straw to straw, 2½d. to 3½d.; pale seconds, 4d. to 4½d.; 22 cases Lemon Grass Oil, 5½d. to 6d., brought in; 1 case Gum Benjamin, £6 5s.; 59 bags Fenu-greek Seeds, 12s. 6d.; 25 bags Turmeric, 12s. 6d. to 13s.; 100 chests Shellac, 33s. to 45s., sold; 92 bags Seedlac, 25s.; 31 boxes Sticklac, 30s., bought in.

By H. W. JEWESBURY and Co.—125 cases Castor Oil, 2½d. to 4½d., sold; 400 bags, 121 pockets Nux Vomica, 9s., bought in.

By C. L. JENKIN.—65 serons 22 bags Crown Bark, 6d., 9d., and 1s. 8d., out; 1 chest Cantharides, 2s. 10d.; 5 serons Ipecacuanha, 4s. 3d. to 4s. 6d.; 10 tins Balsam Tolu, 3s. 6d., sold; 10 casks Flag Annatto, 1s., bought in; 18 chests Rhubarb, 1s. 10d. to 2s., part sold; 6 hog-heads American Beeswax, £6 17s. 6d. to £7; 11 cases East India Beeswax, £4 17s. 6d. to £5; 48 cases Vegetable Tallow, 35s. 6d. to 36s. 6d.; 15 cases Cod Liver Oil, 4s.; 7 cases Squills, 5d. per cwt.

By G. BROOKS and Co.—30 chests Turkey Opium, 12s., 16s., 7s., 10s. 6d.; 26 casks Alx. Senna, 2½d., sold; 16 cases Egypt Opium, 8s. to 10s.; 55 pkgs. Arabic, 71s., 72s., 95s., 98s. 33s. 6d., sold; 31 chests Sandrac, 48s., sold; 3 casks Jalap, 2s.; 60 casks Castor Oil, 4½d., sold; 35 cases picked Arabic, £7 5s. to £7 10s.; 2 cases Tragacanth, £12 16s.; 3 canisters Oil Geranium, 11d.; 10 pkgs. Scammony, 14s. 9d., to 20s., out; 500 ounces Otto Roses, 17s.; 39 pgs. Sponges, 14s. 3d. to 14s. 6d.

By PRICE, GIFFORD, and Co.—113 serons Yellow Bark, 2s. 10d. to 4s. 3d., sold; 10 bales Matico, 6d., bought in; 18 chests East India Gum Arabic, 24s. to 38s., bought in; 5 cases picked Turkey Gum Arabic, £6 5s. to £6 7s. 6d.; 6 cases Vanilla, 23s. to 27s., bought in; 3 cases Cantharides, 2s. 10d., bought in; 6 cases Liquorice Juice, 85s., sold; 8 bales Camomile Flowers, 90s. to 91s., bought in.

By LEWIS and PRAT.—377 cases Castor Oil, good pale, 4d. to 4½d., straw to pale straw, 2½d. to 3½d., fine pale, 5d., bought in; 7 casks Gum Sandrac, 40s. to 42s., bought in; 35 bags Madras Cardamoms, 2s. to 2s. 3d., sold; 3 chests Malabar Cardamoms, 2s. to 2s. 1d., sold; 7 chests East India Beeswax, 1 case West India ditto, £6 16s. 10 to £8 17s. 6d.; 2 cases Cape Aloes, 30s. 6d.; 12 bags Guinea Grains, 40s., bought in; 8 puncheons fine Palm Oil, 29s., bought in; 1 cask Cod Liver Oil, 8s., bought in; 34 kegs 6 boxes West India Tamarinds, 30s. to 32s., sold; 1 case Saffron, 28s., bought in; 128 boxes Gum Kino, 40s., sold; 1 chest Gum Piney, 34s.; 12 chests Gum Myrrh, 45s., bought in; 2 chests Gum Animi, £11; 8 packages East India Beeswax, £6 15s.; 36 bales Honduras Sarsaparilla, £1 5s. to £1 6s., bought in; 20 kegs West India Tamarinds, 30s., bought in; 17 packages Brasil Isinglass, out; 10 boxes Gum Guaiacum, out; 2 chests Egyptian Opium, 10s., bought in; 2 chests 1 bag Malabar Cardamoms, 2s. 2d. to 2s. 10d.; 1 box Vanilla, 8s., bought in.

By ELLIS and HALM.—8 chests Gum Benjamin, £5 7s. 6d. to £7 2s. 6d., bought in; 6 chests Gum Ammoniacum, 30s., bought in; 12 chests Gum Asafoetida, 40s. to 52s., sold; 2 chests Gamboge, £8 2s. 6d.; 60 barrels Gum Thus, 10s., bought in; 13 chests Shellac, 42s. to 42s. 6d.; 1 cask Gum Copal; 160 ounces Ambergris, out; 100 ounce caddies China Musk, 16s., out; 60 chests Rhubarb, 2s. 3d.; 2 cases Balsam Tolu, 8s. 9d., bought in; 6

bales Sarsaparilla, 1s. 4d., bought in; 1 case Extract Rhatany, out; 50 boxes Extract Logwood, 9d.; 20 boxes Extract Quercitron, out; 5 casks Cod Liver Oil, out; 10 cases Oil Aniseed, 5s. 9d., out; 1 case Oil Wintergreen, out; 1 cask Honey, out; 3 cases Croton Oil, 3½d.; 16 bales Jalap, 2s. 6d.; 63 bags Nux Vomica, 9s. to 9s. 6d., bought in; 11 boxes Zanzibar Aloes, £6; 35 bottles Croton Oil, 3½d.; 46 bottles Cajaputa Oil, 4d.; 1 case Cantharides, 2s. 9d.; 18 barrels St. Vincent Arrowroot, 4d. to 4½d.; 6 half-barrels Bermuda ditto, 10½d.

IMPORTS OF DRUGS, &c., INTO LONDON DURING THE WEEK ENDING WEDNESDAY, SEPT. 2.

THURSDAY, August 28.—In the Resolution, from Alexandria. 207 brls. of gum.

In the Patrick Henry, from New York.

371 brls. rosin, 4 cks. oil, 3 bls. jalap.

In the Sarrala, from Hamburg.

12 cks. white copperas.

In the Columbine, from Hawre.

1000 pkgs. cinnamon.

In the Madeira Packet, from Megadore.

1 sn. beeswax, 263 snrs. sweet 132 snrs. bitter almonds, 2 cks. gum.

In the Ariel, from Smyrna.

80 tons valonia, 92 cs. 41 bgs. 1 bl. sponge, 166 pcs. iron. In the Queen, from Bahia.

64 logs redwood.

FRIDAY, August 29.—In the Diana, from Stettin.

4922 pos. spelter.

In the Diana, from Amsterdam.

20 cks. plumbago, 100 bgs. carraways, 20 cks. gum damar, 10 cs. beeswax.

In the Calista, from Belize.

81 bgs. cochineal, 190 t. logwood, 1 bx. gaid.

SATURDAY, August 30.—In the Bombay, from Bombay, Cannanore, Tellicherry, Calicut, and Cochin.

478 bgs. linseed, 91 cs. star aniseed, 470 cs. gum olibanum, 6 cs. wax, 910 bgs. pepper, 47 bgs. gum arabic, 30 cs. gum animi, 2400 bgs. myrabolanes, 38 cs. saltpetre, 24 robbins 90 bgs. 64 bdls. cocculus indicus, 13 cs. beeswax, 2 cs. croton oil, 36 bgs. opium, 108 bls. madder roots, 24 cks. castor oil, 4 cs. 9 chts. vermilion, 5 bgs. bhulama, 8 bgs. rapeseed, 4 cs. ukulkera, 3 bdls. bark, 25 chts. kenda root, 12 bdls. cuscus root, 177 bgs. 193 cs. ginger, 57 bgs. shellac, 36 bgs. 15 cs. gum benjamin, 209 bgs. castor seed, 7 cs. wormseed, 1 cs. myrrh, 1 cs. gamboge, 27 bdls. nux vomica, 2667 ps. sapanwood, 20 bgs. turmeric, 30 bls. munjeet, 37 cs. 81 bxs. gum kino.

In the Svea, from Soderham.

19 bars iron.

In the Ocean Queen, from New York.

4331 brls. turpentine.

In the Thesdo, from Norkoping and Skeleftea.

2683 bars iron.

In the Eliza Ann, from Stockholm and Umea.

1879 bars iron.

In the Planet, from Jamaica and Madeira.

216 brls. ginger, 1 bx. beeswax, 18 tons logwood.

MONDAY, September 1.—In the Christiana, from Sundswall. 3046 bars iron.

In the Adelaide, from Gefle.

5548 bars iron, 58 bdls. steel.

In the Glasgow, from Bombay.

730 chts. 2907 bgs. 518 bdls. myrabolanes, 131½ bgs. castorseed, 477 cs. ginger, 1279 bgs. linseed, 40 chts. gum benjamin, 11 cs. gum arabic, 243 chts. tealseed, 63 chts. mustardseed, 49 bdls. 34 bgs. munjeet.

	In the Black River Packet, from Jamaica.
123 cks. ginger, 142 bgs. pimento, 29 kgs. honey, 3 pkgs. jalap, 9 tons logwood, 6 tons fustic, 1 ton quassia, 6 pks. succades.	
461 pcs. redwood.	In the Hannah More, from Riga.
20 cks. spelter.	In the Soho, from Antwerp.
2525 bars iron.	In the Skandinavian, from Hernosand.
100 cks. tallow.	In the Therese, from Petersburg.
2804 bars iron.	In the Golden Grove, from Sundswall and Stockhom.
	In the Thames, from Madeira and Jamaica.
23 brls. ginger, 1 bl. sarsaparilla, 13 tons logwood.	
20 brls. carawayseed.	In the Apollo, from Rotterdam.
TUESDAY, Sept. 2. —	In the Anna Charlotte, from Sundswall.
3935 bars iron.	
895 bdls. cutch.	In the Ceylon, from Moulmein.
113 cks. tallow.	In the Hull, from Cronstadt.
202 bkts, 716 bls. 422 hf. bls. gambier, 964 slabs tin, 62 bxs. sticklac, 23 bkts. gum elastic, 8 cks. tallow, 1027 bgs. pepper, 6614 blks. gutta percha, 34 cs. gum benjamin, 42 bgs. gamboge, 500 pcis. sapanwood, 21 cs. nutmegs, 9 cs. mace, 110 slabs tin.	
	In the Margaret Poynter, from Manzanilla.
325 sticks fustic.	
WEDNESDAY, September 3. —	In the Charles, from Buenos Ayres.
150 pps. tallow.	
13 bls. white wax, 1 ck. palm oil.	In the Ophelia, from Cadiz.
	In the Ocean, from Madras and Pondicherry.
314 bgs. saltpetre, 28 bls. beeswax, 504 bgs. turmeric, 168 ch. indigo, 16 bls. pimento.	

TO THE EDITOR OF THE CHEMICAL RECORD.

Pharmaceutical Laboratory, Dudley,
Aug. 27, 1851.

Sir,—Herewith you have an order for 12s. 6d. for twenty-six weeks' RECORD. I like the publication, and hope you may go on and prosper. Your proposed exposé of the adulterations carried on in the drug trade is much required, and must be of great service. It is, indeed, to be regretted that our business is but too much carried on by a systematic system of cheating, and I do hope you will show it up. I enclose you a specimen of pulv. pot. bitart. to begin with. A commercial gentleman called upon me, offering it at a price I felt convinced nothing could be got by. I wanted a sample, which he had not got, but stated that he would get me one from a druggist in this town to whom he had sold it, of which this sent is a portion. I very soon demonstrated to him the presence of a not inconsiderable quantity of sulph. alumini. And this is how the cheap system is carried out. I can supply you with other instances, and give you names too.

I sincerely hope you will go on and show the system thoroughly up. Have a little mercy upon our Pharmaceutical Society, for it has done much good, and I hope is yet calculated to do more. Wishing the RECORD success,

I am, yours respectfully,

F. HOLLIER.

COLOURING FOR SYR. VIOLET.—Archill Liquor, 3ij.; salt of tartar, 3j.; boil to 3ij.

BLACK VARNISH.—Mix equal proportions of boiled oil and lampblack, and to spirit varnish made according to the above form add as much of the composition as will suffice to make "a good black."

Shellac, $\frac{3}{4}$ oz.; mastic, 2 oz.; spirit wine, 12 oz.; ivory black and boiled oil, of each $\frac{1}{4}$ oz.

MASTIC VARNISH.—Mastic, 3x; ol. tereb. Oj. Dissolve in a water bath.

SHELLAC OR LIGHT VARNISH.—Seedlac, 3xij; alcohol, 1 gal.

YELLOW VARNISH.—2. Rad. car. (chin), lbss. Digest in a gallon of spirit of wine; seedlac and shellac, of each lbj.

BROWN VARNISH.—Seedlac, 3ijj.; dried Spanish annatto, 3j.; alcohol, lbij.

Dried Spanish annatto, 3ij; seedlac, lbj.; alcohol, 1 gall.

YELLOW VARNISHES.—Mastic, sandrac, and animi, of each an ounce; drop lake, 10 grains; all well powdered together, or dissolved in 1 pt. rectified spirit with a gentle heat.

To make it WHITE VARNISH, omit the lake; and to make it ELASTIC VARNISH, add $\frac{1}{4}$ oz. beeswax.

BLACK VARNISH.—Shellac, 2 oz.; ivory black, $\frac{1}{4}$ oz.; muriate of ammonia, oz.; indiarubber, $\frac{1}{4}$ oz. Moisten the indiarubber with oil of lavender, and in two days dissolve the whole in 1 pt. rectified sp. wine with a gentle heat.

BLACK VARNISH.—Sp. wine, lbj.; shellac, 3iv.; elemi, 3j.; juniper, 3j.; sp. turpentine, 3j. Digest, and add lamp-black, lbss.

SHELLAC VARNISH.—Shellac, 3iv.; juniper, 3ij.; sp. wine, lbij.

POPKMADE DIVINE.—1. Marrow, 3iv.; p. inid., 3iv.; gum, res. benj., 3ij.; bar. caryoph., 3ij.; ess. bergam., 3ij. Melt and strain.

2. Beef marrow, 3xij.; cere. alb., 3j.; bals. peruv., 3 ss.; ol. amygd., 3j.; ol. wgrist., 3j.; ol. casside, g. xv.; ol. caryoph., g. x.; otto, g. ij.

CAJEPUT OPODELOO.—1. Lin. sapon. co., 16 lbs.; ol. tereb., 8 oz.; tinct. canth., 8 oz.; ol. cajeputi, 2 oz.; liq. ammon. fort., 12 oz. Colour with pareley.

2. Tinct. lytm., 3vj.; ol. tereb., 3vj.; liq. ammon. (PL), 3vj.; lin. sapon., 12 lbs.; ol. cajeputi, 1 oz.

TO CORRESPONDENTS.

* Gentleman who send manuscript to the CHEMICAL RECORD under arrangement for payment are informed that original matter alone will be allowed to count; no abstracts, translations, or adaptations being receivable under the terms proposed. The propriety of this will be obvious.

Windsor, August 25, 1851.

Sir,—Could you put me in the way of procuring a recipe for making blacking, and another for making good plate powder? I am on the point of going out to one of the colonies (Canada), and should be glad to make the two above articles a source of profit, going out as I do in a very humble capacity. Could you also mention in your excellent paper a good analytical chemist?

I am, very respectfully yours,

To the Editor of the CHEMICAL RECORD. FORESTER.
Our correspondent will find the first part of his letter answered in another part of our journal. Let him apply to Dr. Normandy, 67, Judd-street.

"Mr. Peter Nicholson" cannot do better than study at the Museum of Practical Geology.
"A Housekeeper."—Ginger beer is prepared by adding to a gallon of soft water a quarter of a pound of refined lump sugar, two lemons sliced, two ounces of powdered ginger, and a dessertspoonful of bitartrate of potash; simmer over a slow fire for half an hour, but do not let it boil; add a tablespoonful of yeast, ferment in the usual way, and bottle. Ginger beer powders for extemporaneous use are made of 1 drachm and 2 scruples of white sugar, 5 grains of ginger, and gr. xxvj. of sesquicarbonate of soda, in a blue paper, and 30 grains of tartaric acid in a white paper, for half a pint of water.

"Mr. J. Jefferson."—University College is not the University of London: the former is in Gower-street, the latter is at Somerset-house. The senate consists of a chancellor, vice-chancellor, and thirty-six fellows. Degrees are granted in law, arts, divinity, and medicine. When the number of fellows shall be reduced below twenty-five, the members of the senate may elect twelve more to complete thirty-six. The Queen is visitor.

THE CHEMICAL RECORD AND DRUG PRICE CURRENT, conjointly managed by a CHEMIST, a PATENT SOLICITOR, and a LONDON BROKER, is published weekly, at its office, 17, Upper Wellington-street, Strand. It may be had through any bookseller or newsmen, and will be regularly furnished from the office to quarterly, half-yearly, and yearly subscribers. Price 5d., stamped 6d.; quarterly, 6s. 6d.; half-yearly, 12s.; yearly, 23s. Payment in advance.

Post-office orders, or orders on a London house, should be drawn in favour of the Publisher, Mr. RICHARD RADCLIFFE POND, 17, Upper Wellington-street, Strand.

ADVERTISEMENTS.

Sovereign Life Assurance Company. — No. 49, ST. JAMES'S STREET.

TRUSTEES.

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F. G. F. Nelson, Esq.

SECRETARY.

H. D. Davenport, Esq.

The business of this Company is divided into three principal branches. First,—The Assurance of Life and all the ordinary transactions of Assurance Offices. Secondly,—The advancing an amount in connection with the Policy, and the effecting all pecuniary arrangements connected with Life Assurance. And, Thirdly,—The Granting Annuities (both immediate and deferred), and Endowments, upon a plan adopted only by this Company.

THE ASSURANCE OF LIVES.

The following are among the Advantages offered by this Company:—

Tables of Premiums of Assurances, founded upon the most recent return and the combined experience of existing Life Offices, calculated, for the express use of this Company, at the lowest rates, consistent with perfect security.

Three-fourths of the Profits, or £75 per cent., divided, periodically, amongst the Assured; thus affording the security of a Proprietary Company, having a large subscribed capital, in addition to all the essential advantages of a Mutual Company, without the risk and responsibility attending that system.

Such profits may be made available in the three following ways:—by an immediate payment in cash; by addition to the policy; or, by reduction of the premium.

Participation in the profits derived from Policies granted in connection with Loans and Advances.

All Policies issued by this Company are indisputable; that is, the payment of a Policy cannot be disputed or delayed on account of any error or mis-statement in the proposal.

All inquiries as to age, health, habits, &c., are made before the proposals are accepted; the most accurate information being in each case required.

In cases of death by duelling or suicide, Policies which have been assigned are valid to the extent of the interest acquired, and if not assigned a proportion of the premiums received is returned.

Assurances effected for £20, and upwards, upon the payment of one single Premium; or of ANNUAL Premiums; or upon a limited number of payments, or on a gradually decreasing or increasing scale; or the premiums may be paid half-yearly, or quarterly, if more convenient.

The opportunity of obtaining an Advance in connection with the Policy, upon advantageous terms peculiar to this Company.

Assurances effected upon the participating scale, or, if preferred, upon a lower scale, without participation in the Profits.

Where the Assurance is for Life, as large a proportion of the premium as is consistent with safety to the Company allowed to remain on credit for Five Years, at the rate of £5 per cent.

Persons Assured so as to be benefited to the Amount of the Policy, either at a given age, say 60, or upon their death, should it occur previously to such age; thus, by the investment of a small portion of their incomes, securing a provision for themselves in their old age, or for their families, should they die before the specified period.

Persons Assured with this Company may reside in any part of Europe, without extra charge; and, if they have occasion to proceed to any other part of the world, can keep up their Policies upon payment of an increased rate, commensurate with the risk incurred; which extra rate will cease upon their return to Europe, in a good state of health.

No extra Premium charged on the lives of Military or Naval men, unless in actual service.

Whole-world Policies are granted to persons assuring the lives of others on payment of an extra rate.

No admission or entrance fee required, nor any charge made for the Policy beyond the amount of the stamp.

Parties desirous of discontinuing the payment of their Annual Premiums may dispose of their Policies to the Company, for a sum of money payable immediately; or, on surrendering them, may obtain a new Policy, without any further Annual Premium, for a sum to be agreed upon, payable at the death of the life assured. The person to whom such new Policy is granted may be entitled, in respect of it, to participate or not in the profits to be periodically distributed.

Persons Assured for Life to the amount of £500, and who have been so for a period of twelve months, have the privilege of voting in the election of two of the Auditors.

Every pains taken to investigate the state of health of the Assured before the proposals for Assurance are accepted, so as to avoid dispute or litigation after death.

Every facility afforded to persons assuring the lives of others, in order to render such Policies effectual securities.

Claims paid three months after satisfactory proof of death, or earlier, upon rebate of interest until the specified time of payment.

The Company purchases contingent or reversionary Property, grants immediate Survivorships and deferred Annuities, endows Widows and Children, and undertakes all risks contingent upon the duration of life.

Policies which have lapsed for non-payment of Premiums renewed upon payment of a fine; satisfactory proof being given respecting the health of the party.
H. D. DAVENPORT, Secretary.

Lamplough's Effervescent Pyretic Saline.—Dr.

Prout has characterized the discovery of it as apparently unfolding the germs of immense benefit to mankind, certainly of importance equalled only in the annals of medicine by those of the illustrious Harvey and Jenner.

To the intelligent but uninitiated in the art and mystery of medicine it is merely necessary to recal the fact that at one period all parts of the body were in a fluid state, and daily and momentarily since have derived their nourishment and support from the vital current—the necessity of keeping that fluid supplied with the stimulus which is the true cause of its action is most important, and must be apparent to all.

Dr. Yeoman, speaking of the Pyretic Saline, in the *People's Medical Journal*, 29th April, 1851, says, "For a cooling, refreshing, and wholesome spring or summer beverage, we know of nothing better than a tumbler of fresh water and a teaspoonful of this preparation. We speak from proved and personal experience, and cordially recommend our readers to test it in like manner."

Those who from choice drink water, or from necessity take that which has filtered through chalk, should use frequently the Pyretic Saline, to prevent the injurious consequences arising from its being surcharged with that substance. It has been proved, beyond all doubt, that these Salines are the means Nature uses to hold in solution the lime necessary to the formation of bone in the body,—hence a deficiency will account for gout, gall stones, and other painful affections.

In connection with these facts it is necessary to associate the name of LAMPLOUGH, Chemist, 88, Snow-hill, London, whose reiterated attempts during past years have been eminently successful in manufacturing the Pyretic Saline in an agreeable, cheap, and efficacious form, suited to all constitutions; for, like natural food, they assimilate with it, and are taken up by the absorbent vessels, diffusing themselves again through the system, thus supplying the continuous waste of natural secretions, however great or varied they may prove.

Prepared only at the Laboratory, 88, Snow-hill, and 1, New Farringdon-street, London. Established 1707.

TO GENTLEMEN WITH TENDER FEET.

J. Chappell, 388, Strand, corner of Southampton-street, BOOTMAKER and PROFESSOR OF FITTING. Invites the attention of such to his METHOD OF MEASURING, by which he guarantees to produce a Fit unprecedented for comfort, and combined with the most fashionable shape. Those Gentlemen upon whom Boot-makers have practised unsuccessfully are particularly solicited by J. C., who will undertake to fit them at once, however difficult. Established 1825.

LADIES' BOOTS and SHOES.—J. CHAPPELL respectfully informs Ladies that, owing to repeated applications, he has commenced the Sale of Ladies and Children's Boots and Shoes, of which an Assortment will be kept on hand.

EVERY ARTICLE WILL BE OF THE BEST QUALITY, AT THE LOWEST PRICE.

A supply of French Boots and Shoes will be received every month from one of the first houses in Paris. This department is carried on under the superintendence of Mrs. CHAPPELL.

Noirsain's Ventilating Grates and Stoves.—A long

sought-for desideratum at last obtained. Great Economy in Fuel,—entire Prevention of Smoking in Chimneys—and Perfect Regulation of the Temperature of Rooms, effected by the new Ventilating Grates, which may be applied to any fire-place.

M. NOIRSAIN solicits the attention of the public and scientific men to his noise apparatus,—the utility and superior advantages of which will be satisfactorily demonstrated at his Depot, 181, Regent-street, to any visitor. The highest testimonials given. Prices, from two guineas upwards.

ADVERTISEMENTS.

ATHENÆUM LIFE ASSURANCE SOCIETY,

30, SACKVILLE STREET, LONDON.

Established for the Assurance of the Lives of Authors, Painters, Sculptors, Musicians, persons connected with every Art and Science, and the Public generally.
INCORPORATED BY ACT OF PARLIAMENT.

CAPITAL £100,000, IN SHARES OF £1 EACH, TO BE PAID UP IN FULL.
WITH POWER TO INCREASE TO A MILLION.

PROSPECTUS.

In ushering before the world for its consideration and patronage any addition to a subject previously well known, it is generally expected and required that there should be at least an appearance of novelty, although the subject itself is incapable of receiving any material improvement. The projectors of this Society, however, from experience and correct calculation, having discovered new principles and features in Life Assurance, so peculiarly adapted to the feelings, views, and wants of literary men, artists, musicians, and all persons connected with every branch of art and science, are convinced, when such advantages become known and appreciated, the ATHENÆUM must take the lead amongst those Societies which are ever on the watch to achieve new and beneficial results for all who have confidence in their exertions.

Men of letters and the liberal arts are too generally regarded with censure rather than with commiseration, on account of the unfortunate circumstances so often attending their worldly affairs, and which have unjustly given them a character for improvidence; yet few persons in the active pursuits of business can form a proper notion of the many causes which prevent the student, the scholar, and the secluded artist from being so fortunate as themselves; nor is it here considered fit to analyze such causes, or set right such notions. The object of this Society, therefore, is to allow the man of letters and the artist to indulge in that dreamy existence so peculiarly his nature, and so essential to the development of his talent, and give protection and provision where so much required. For while this urged improvidence is admitted to be no consequence of selfishness,—it being well known that in no other class is disinterested nobleness of spirit so often and unequivocally exhibited,—yet no means have hitherto been devised to arrest this censured characteristic. This Society, therefore, wishes to open an independent course for the consideration of

men of letters, art, and science, especially as it is brought before them with associations of their own, and in no way assuming the offensive and humiliating position of charity.

Many a great work has been left unfinished, many a teeming brain has given way before those powerful foes to genius, anxiety and fear of the future! How often has the man of talent paused and trembled, while he has contemplated the destitution of his family, and all that is dear to him, if overtaken by death in the midst of his projects; and while Life Assurance is suggested to obviate such afflictive thoughts, then the apprehension that, should adverse circumstances prevent punctuality in his annual payments, the sacrifice already incurred will have been in vain. This Society cheerfully and with confidence points to the provision it has made for such cases, where help will be given, and every encouragement afforded to sustain the claims upon it unforfeited and uninjured.

To the young, the principles of this office will be peculiarly beneficial, the amount of premium being so trifling; while in the course of time the participation in the profits of this Society must return them such sums, that all they may have advanced in their early years will not only have passed again into their own possession, but a property established that will be of value during life, or a handsome bequest in case of death.

It is therefore hoped, by the establishment of this Society, to remove from men of letters and artists the reproach that in so many instances has attended them, to enforce a more ennobling appreciation of their worth, to prevent their becoming objects of charity, which humiliates as much as it relieves; and that, in the midst of their triumphs, and while in the possession of health, there shall not be seen in the dim perspective the almshouse or the prison.

NEW FEATURES OF THIS OFFICE, TO WHICH

This office will introduce a system for obviating an acknowledged difficulty in the way of propagating the advantages of Life Assurance. In fact, the principal objection to adopt its blessings, even by many who thoroughly appreciate its value, is the possibility of forfeiting their policy by being unable to meet the payments when they become due; and, on the part of the offices, it has been an unwise, not to say an unjust, proceeding to compel a strict observance of this provision. It has been unwise, for the reason, that, by carrying out this measure to the letter, such enormous profits have arisen from it as to become unwieldy and useless; since the management of them engrosses such attention and trouble as to make the office careless of extending its business. It has also been unjust; for, instead of rewarding prudence and self-sacrifice by assisting, even for a while, such strenuous exertions for the accomplishment of a noble object, or by bestowing some equivalent for past privation, it passes by such virtue unrecognized and unrewarded, and thus perverts the very principle from which Life Assurance emanated. To remedy as far as possible this defect, there will be a fund instituted by the Athenæum, called the Provident Fund, to be raised by the mutual contributions of the members themselves, on the following original and beneficial plan:—

The first five hundred persons who desire to participate in this benefit will have a tenth portion of their policies for the purposes of this fund, which will be thus applied:—

1st. To the keeping up the policies of such members who shall have previously paid five annual premiums. The aid afforded by this fund for that purpose will not be continued for a longer period than five consecutive years, and to be returned to the Society at the convenience of the assured, with interest at the rate of 2½ per centum per annum, or the sum advanced may be deducted with such interest from the policy when it shall become a claim.

2nd. To grant small loans on the deposit of the policy to those members who may require temporary assistance.

3rd. To such qualified members who really need it, the Directors will have the discretionary power of granting such an amount as will purchase in the Society an Annuity, not exceeding £100, during the lives of themselves and widows; and

4th. To divide among the surviving members, at the end of twenty years from the date of the list being closed, the whole of the remaining and unapplied portion of the fund.

The rates of premium to secure these important advantages are lower than those in many first-class offices where no such privileges exist. For example, to assure £1,000 at the age of 30 in the Equitable would cost 236 l. 1s. 9d. per annum; while a premium of £26 5s. in this office would assure, in addition to £1,000 the sum of £100 to the Provident Fund.

It is also determined to provide, as far as practicable, a similar fund for such of the original Shareholders as may become distressed, by applying a portion of the entire profits of the Society for such purpose.

One important feature of this society, and which has not yet been adopted by any other Assurance Company in this country, although generally in operation on the Continent, is the plan of granting policies made payable to the holder. The difficulty, expense, delay, and annoyance so frequently experienced in pecuniary transactions in the assignment of policies, have long been felt as a grievance; and the Directors of this Society, having given this subject much consideration, and acting under

ATTENTION IS PARTICULARLY REQUESTED.

the advice of competent legal authorities, are resolved to give the assured the option of receiving policies payable to the holder. The advantages of these policies must be obvious, as their simple construction will give greater facilities in their temporary or permanent transfer to a third party. This has been so fully appreciated on the Continent, that policies in any other form are absolutely refused by the great bulk of insurers. The publicity, so frequently annoying and detrimental, in the assignment and re-assignment of policies in pecuniary transactions, as well as the delay and expense consequent on the old system, have been so often complained of, that the Directors of this Society believe that the plan of making policies payable to the holders must eventually be generally adopted in this country.

A moment's reflection is sufficient to show that the great bulk of the middle and professional classes of this country stand as much in need of provision against the casualty of permanent sickness as against that of death; while statistical inquiries have proved that nearly 5 per cent. of the adult population of this kingdom are constantly incapacitated from following their occupations, and a great portion at advanced periods of life become permanently invalided. Therefore, to meet so important a desideratum, this Society will, on very moderate terms, grant Policies payable during the time of very long sickness, or when accident or any other casualty shall prevent the assured obtaining his livelihood.

To conclude, the Directors wish it emphatically to be understood, that there are no privileges or advantages in this Institution in which the public do not fully and equally participate, as the appeal is to them; and no benefit can accrue to any class, however worthy or respected, without the co-operation and support of all.

This is the only Society that issues Policies absolutely indisputable. Claims paid immediately on satisfactory proof of death, and the exhibition of such documents as are required by law.

Seventy per cent. of the profits divided among those assured on the participating scale, thus securing all the real advantages arising from a Mutual Association, without incurring any legal or pecuniary liability whatever.

The first division of profits will take place at the end of seven years, and thenceforward every five years, and may be applied as a bonus, to be added to the sum assured, in reduction of future premiums, or in cash.

Diseased lives assured on equitable terms, the extra premiums being discontinued on restoration of the assured to permanent health.

Members of consumptive families assured at equitable rates.

Assurances may be effected from £50 to £10,000.

Endowment Assurances granted, payable to the Assured, should he live to a given age, or to his representatives should he die before.

Immediate and deferred annuities on very favourable terms.

No entrance fee charged.

The extra premiums for residence in foreign climates are lower than in other offices, and are founded on data.

Assurances may be effected in one day, the medical officer being in attendance.

Interest at the rate of 5 per cent. allowed on the paid-up capital.

Medical men remunerated in all cases by the Society.

A liberal commission allowed to all who introduce business.

HENRY SUTTON, Manager.

London: Printed by RICHARD RADCLIFFE POND, of No. 28, Church-street, Old Kent-road, Surrey (at No. 10, Crane-court, Fleet-street, in the City of London), and published by him at the office, No. 17, Upper Wellington-street, in the Parish of St. Paul, Covent Garden, Westminster.—Saturday, September 6, 1851.



The Royal Exchange Assurance.—Incorporated A.D. 1720, by Charter of King George the First. Chief Office, Royal Exchange. Branch, 29, Pall-mall. FIRE AND MARINE ASSURANCES on liberal terms. LIFE ASSURANCES with BONUS (which has averaged 46 per Cent. on the Premium); or, at lower rates, without Bonus. Moderate Premiums and an equitable division of Surplus. Exemption by the Charter from the liabilities of Partnership. The security of a large Capital Stock, and the moral guarantee afforded by 131 years' experience and reputation. The soundness of a thoroughly tested Office with all the real improvements of modern practice. ALEX. GREEN, Secretary.

Gresham Life Assurance Society, for Ordinary and "Declined" Lives. Offices—37, Old Jewry, London.

TRUSTEES.

Matthew Marshall, Esq., Bank of England.
Stephen Olding, Esq., Lombard-street.
William Smee, Esq., Bank of England.

This Office will be found highly eligible for every description of Life Assurance.

Perfect security is guaranteed by an ample paid-up Capital, subscribed by persons of the highest character and respectability.

The Policies are indisputable, unless procured by fraud, and claims are promptly and liberally settled.

Policies may be effected without loss of time, the Directors, together with the Medical Officer, being in attendance at the Office every day.

The Lives of Individuals whose habits are regular and temperate, and who, though neither diseased nor strongly predisposed to disease, have been declined by other Offices, are Assured at Equitable Rates; hence the probability of Lives being rejected by the "Gresham" is reduced to the narrowest limit.

Policy Holders may obtain Loans on real or personal security.

The Funds of the Society are invested in the most advantageous manner, so as to promote security, and to afford the largest possible Bonus to the Assured at the periodical divisions.

The Management of the Society is conducted in the most economical manner, as is shown by the Annual Reports.

Upwards of Two Thousand Proposals for Assurance were received in the two years ending July, 1850, amounting in the aggregate to nearly a Million Sterling; and the Directors were enabled to carry upwards of Ten Thousand Pounds to the Society's Best during the second year alone, chiefly from the Premiums taken during last year.

A liberal Commission allowed to Agents and Solicitors.

N.B.—Active and influential persons will be appointed in districts where the Society is not already represented.

THOMAS ALFRED POTT, Secretary.

Noirsain's Ventilating Grates and Stoves.—A long sought-for desideratum at last obtained. Great Economy in Fuel, entire Prevention of Smoking in Chimneys—and Perfect Regulation of the Temperature of Rooms, effected by the new Ventilating Grates, which may be applied to any fire-place.

M. NOIRSAIN solicits the attention of the public and scientific men to his patent apparatus,—the utility and superior advantages of which will be satisfactorily demonstrated at his Depot, 131, Regent-street, to any visitor. The highest testimonials given. Prices, from two guineas upwards.

FLOOR CLOTHS.—Best quality, warranted .. 2s. 6d. per square yard.

Persian and Turkey pattern 2s. 9d. do.
Common Floor Cloth. 2s. 0d. do.

INDIA MATTING, COCOA FIBRE MATS and MATTING.

Japanned Folding Screens, from 35s.

JOWETT, Manufacturer, 553, New Oxford-street.

VOL. I.

The Weekly News and Chronicle.—The Weekly NEWS (founded as Douglas Jerrold's Weekly Newspaper), and the WEEKLY CHRONICLE (founded by Sir Henry George Ward), are amalgamated under the above title. A junction of the political strength of both will ensure to the cause of Reform an organ of superior influence, whilst their united literary resources will essentially aid the progress of general enlightenment. The established reputation of the one for official as well as general information, the high literary character of the other, and the political independence of both, will be fully maintained, so as to render the WEEKLY NEWS AND CHRONICLE one of the most complete mirrors of the world's doings, and one of the most faithful and vigorous exponents of public opinion.

(From *Mitchell's "Newspaper Press Directory"* for 1851.)

"WEEKLY CHRONICLE.—Principles: Liberal, advocating all measures which the conductors deem characteristic of genuine and healthful reform. This paper embraces in its comprehensive scheme News, Politics, Commerce, Literature, and Art. Whilst the Saturday edition is characterized by the variety of its contents, the Sunday edition gives the latest continental, provincial, and metropolitan intelligence; the court and ministerial movements, and those of the great political parties, forming distinguishing features.

"WEEKLY NEWS.—Principles: Liberal, advocating the progressive amelioration of the Masses, and the interests of Literature.

Its leading political articles are eloquently and powerfully written, and its literary reviews display an extensive range of knowledge, a rare scholarship, and great independence. Its contributors being men of experience and high repute, an essential value is attached to their opinions. There is a manly candour, an elevation of sentiment, and a polished tone about this publication which declare it to be the production of highly-gifted minds, and to be intended for the educated classes of society. Considered as a whole, this journal fully answers the title bestowed upon it by its able founder, and is one of the most useful and agreeable of this class of newspapers."

(From the *Cambridge Independent Press*.)

"LONDON WEEKLY NEWSPAPER.—It will be seen by advertisement that the WEEKLY NEWS and WEEKLY CHRONICLE have been amalgamated. Both papers have since their establishment, the one by Mr. Douglas Jerrold, the other by Mr. Ward, then Member for Sheffield, been conducted upon liberal principles, and are acknowledged to be first-class newspapers. The literary merits of the WEEKLY NEWS have established it as an unusual favourite in the circles of the literati; and the result of the combination of the two papers will be the production of one of the very best metropolitan journals extant."

(From the *Gateshead Observer*.)

"THE WEEKLY NEWS.—This ably-edited and sub-edited paper, from which we make frequent extracts, and of which we have more than once expressed our high opinion, is (as elsewhere announced) to be next week wedded to the WEEKLY CHRONICLE, a journal of great repute. We congratulate the 'happy couple' on their nuptials, and wish them every success; their patrons doubled, and their tolls divided."

THE WEEKLY NEWS AND CHRONICLE, price 6d., is published at No. 337, Strand, London.

The First Edition, on Friday Evening, in time for delivery by the Early Post on Saturday Morning throughout the provinces.

Ford's Eureka Shirts and Ford's Eureka Shirts. Collars are not sold by any hosiers or drapers, and can therefore be obtained only at 185, STRAND. The Shirts are made in two qualities. The first is 40s. the half dozen, the second quality 30s. the half dozen.

Gentlemen who are desirous of purchasing shirts in the very best manner in which they can be made are solicited to inspect these, the most unique and only perfect fitting shirts made.

Price Lists, containing directions for self-measurement and every particular, are forwarded post-free, and the pattern books to select from, of the new Registered Coloured Shirting, on receipt of six stamps.

The COLLARS possess an improved method of fastening, which entirely dispenses with the use of strings, loops, or elastic contrivances, adapted to any size, suitable for once or twice round cravats, may be had in three different sizes, and either rounded or pointed. Price 11s. 6d. per dozen; two, as sample, sent post-free, on the receipt of 26 postage stamps.

RICHARD FORD, 185, STRAND, LONDON.

Joseph Loader, Upholsterer and Cabinetmaker,
23, PAVEMENT, FINSBURY, LONDON.—The extensive celebrity of JOSEPH LOADER'S Establishment for twenty-five years, for all articles pertaining to the Upholstering business, affords a certain guarantee to all purchasers from his stock that whatever they may select will be of the most approved fashion and best workmanship, moderately charged.

A vast assortment, suitable to the decoration of the Dining, Drawing-room, Library, and Boudoir, is uniformly kept, comprising Chairs, Tables, Pier and Chimney Glasses, Gilt-frames, Drawers, Wardrobes, Carpets, Mattresses, and Bedding, at regularly fixed prices, corresponding with the wants or elegance of household economy, offered on terms which none can successfully compete with.

Joseph Loader's Portable Bedstead, which forms an ottoman settee, easy-chair, and bedstead, with three cushions, stuffed in printed cotton, on brass socket castors, £2. 10s. to £4. 10s.; and the celebrated

PATENT SELF-ACTING RECLINING CHAIRS,

that recline and elevate with the least possible trouble or difficulty to the occupier, the weight on the seat acting as a counterbalance to the back, by means of his Patent Self-adjusting Lever, requiring no rack, catch, or spring, to retain any required position.

J. L. also calls particular attention to his Patent Air-tight Bedsteads, carpeted and polished, at £1. 9s. and £1. 15s., equal to the most expensive Commodities, as well as the Patent Pedestal Washstands, marble top and fittings complete, particularly adapted for the office, surgery, or cabin.

	PRESENT TARIFF.	£ s. d.	£ s. d.
Solid Rosewood Chairs, French polished		0 15 0	each to 1 2 0
Sets of Eight Mahogany ditto		4 4 0	— 4 10 0
Gondola Easy Chairs (in leather)		1 8 0	— 1 16 0
Mahogany Lounging Chairs, carved throughout, spring stuffed, in Morocco, on patent castors		3 4 0	— 3 10 0
Couches, with loose squabs, all hair		2 15 0	— 3 15 0
Mahogany Loo Table, French polished		2 11 0	— 2 14 0
Rosewood ditto, on pillars		3 10 0	— 4 8 0
Rosewood Chimney, with carved backs and marble tops, 3-ft., carved		3 5 0	— 5 0 0
4 ft. Carved Mahogany Sideboard, with drawers and four doors, Cellarets and Trays complete, French polished		4 12 0	— 5 15 6
Mahogany Dining Tables, with sliding frames, loose leaves, and castors		3 12 0	— 5 5 0
Mahogany Bedsteads, with cornices or poles, sacking or lath bottoms, polished		4 0 0	— 4 15 0
3 ft. 6 in. Elliptic Washstands, marble tops		3 12 6	— 3 12 6
Winged Wardrobes, with drawers in centres		8 10 0	— 15 0 0
Chimney Glasses, in gilt frames, 30 by 18, to 40 by 24 inches		2 1 0	— 3 17 0

* Shipping and Country orders promptly executed, and the customary allowances made in all wholesale transactions.

JOSEPH LOADER'S Establishment, 23, Finsbury-pavement, London, to whom it is requested, as a favour, that all letters may be addressed in full.

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Lamplough's Effervescent Pyretic Saline.—Dr.

Lamplough has characterized the discovery of it as apparently unfolding the germs of immense benefit to mankind, certainly of importance equalled only in the annals of medicine by those of the illustrious Harvey and Jenner.

To the intelligent but uninitiated in the art and mystery of medicine it is merely necessary to recal the fact that at one period all parts of the body were in a fluid state, and daily and momentarily since have derived their nourishment and support from the vital current—the necessity of keeping that fluid supplied with the stimulus which is the true cause of its action is most important, and must be apparent to all.

Dr. Yeoman, speaking of the Pyretic Saline, in the *People's Medical Journal*, 39th April, 1861, says, "For a cooling, refreshing, and wholesome spring or summer beverage, we know of nothing better than a tumbler of fresh water and a teaspoonful of this preparation. We speak from proved and personal experience, and cordially recommend our readers to test it in like manner."

Those who from choice drink water, or from necessity take that which has filtered through chalk, should use frequently the Pyretic Saline, to prevent the injurious consequences arising from its being surcharged with that substance. It has been proved, beyond all doubt, that these Salines are the means Nature uses to hold in solution the lime necessary to the formation of bone in the body,—hence a deficiency will account for gout, gall stones, and other painful affections.

In connection with these facts it is necessary to associate the name of LAMPLOUGH, Chemist, 88, Snow-hill, London, whose reiterated attempts during past years have been eminently successful in manufacturing the Pyretic Saline in an agreeable, cheap, and efficacious form, suited to all constitutions; for, like natural food, they assimilate with it, and are taken up by the absorbent vessels, diffusing themselves again through the system, thus supplying the continuous waste of natural secretions, however great or varied they may prove.

Prepared only at the Laboratory, 88, Snow-hill, and 1, New Farringdon-street, London. Established 1767.

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It is strongly recommended to the notice of mothers and nurses for the use of infants of the most tender age, being far superior to any other powder; also after sea-bathing, and for gentlemen after shaving its agreeable effects will be fully tested.

ALFRED BURY recommends the Royal Pompadour Powder as an article of comfort and utility (not as a cosmetic), but as a plain vegetable powder for the use of both ladies and gentlemen, retaining its virtues and purity in any climate, consequently it is well worthy the attention of merchants, captains, and speculators, being a preparation that commands an extensive sale throughout the civilised world.

Sold in packets, 1s. and 2s. 6d. each. Those at 2s. 6d. are equal to three 1s. packets. Forwarded by post for sixteen or thirty-eight uncut stamps, by the Proprietor, ALFRED BURY, 10, Exeter-change, London and sold by Perfumers, Chemists, and Patent Medicine Vendors.

Sovereign Life Assurance Company.—No. 49, ST. JAMES'S STREET.

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Benjamin Bond Cabell, Esq., M.P., F.R.S., F.S.A., Temple.
Henry Pownall, Esq., Spring-grove, Hounslow.
Sir Claude Scott, Bart., Cavendish-square.

The business of this Company is divided into three principal branches. First,—The Assurance of Life and all the ordinary transactions of Assurance Offices. Secondly,—The advancing an amount in connection with the Policy, and the effecting all pecuniary arrangements connected with Life Assurance. And, Thirdly,—The Granting Annuities (both immediate and deferred), and Endowments, upon a plan adopted only by this Company.

THE ASSURANCE OF LIVES.

The following are among the Advantages offered by this Company:—Tables of Premiums of Assurances, founded upon the most recent return and the combined experience of existing Life Offices, calculated, for the express use of this Company, at the lowest rates, consistent with perfect security.

Three-fourths of the Profits, or £75 per cent., divided, periodically, amongst the Assured; thus affording the security of a Proprietary Company, having a large subscribed capital, in addition to all the essential advantages of a Mutual Company, without the risk and responsibility attending that system.

Such profits may be made available in the three following ways:—by an immediate payment in cash; by addition to the policy; or, by reduction of the premium.

Participation in the profits derived from Policies granted in connection with Loans and Advances.

All Policies issued by this Company are indisputable; that is, the payment of a Policy cannot be disputed or delayed on account of any error or mis-statement in the proposal.

All inquiries as to age, health, habits, &c., are made before the proposals are accepted; the most accurate information being in each case required. In cases of death by duelling or suicide, Policies which have been assigned are valid to the extent of the interest acquired, and if not assigned a proportion of the premiums received is returned.

Assurances effected for £30, and upwards, upon the payment of one single Premium; or of ANNUAL Premiums; or upon a limited number of payments, or on a gradually decreasing or increasing scale; or the premiums may be paid half-yearly, or quarterly, if more convenient.

The opportunity of obtaining an Advance in connection with the Policy, upon advantageous terms peculiar to this Company.

Assurances effected upon the participating scale, or, if preferred, upon a lower scale, without participation in the Profits.

Where the Assurance is for Life, as large a proportion of the premium as is consistent with safety to the Company allowed to remain on credit for Five Years, at the rate of £5 per cent.

Persons Assured so as to be entitled to the Amount of the Policy, either at a given age, say 60, or upon their death, should it occur previously to such age; thus, by the investment of a small portion of their incomes, securing a provision for themselves in their old age, or for their families, should they die before the specified period.

Persons Assured with this Company may reside in any part of Europe, without extra charge; and, if they have occasion to proceed to any other part of the world, can keep up their Policies upon payment of an increased rate, commensurate with the risk incurred; which extra rate will cease upon their return to Europe, in a good state of health.

No extra Premium charged on the lives of Military or Naval men, unless in actual service.

Whole-world Policies are granted to persons assuring the lives of others on payment of an extra rate.

No admission or entrance fee required, nor any charge made for the Policy beyond the amount of the stamp.

Parties desirous of discontinuing the payment of their Annual Premiums may dispose of their Policies to the Company, for a sum of money payable immediately; or, on surrendering them, may obtain a new Policy, without any further Annual Premium, for a sum to be agreed upon, payable at the death of the life assured. The person to whom such new Policy is granted may be entitled, in respect of it, to participate or not in the profits to be periodically distributed.

Claims paid three months after satisfactory proof of death, or earlier, upon rebate of interest until the specified time of payment.

Policies which have lapsed for non-payment of Premiums renewed upon payment of a fine; satisfactory proof being given respecting the health of the party.

H. D. DAVENPORT, Secretary.

ADVERTISEMENTS.

NATIONAL PROVINCIAL LIFE ASSURANCE SOCIETY.

COMPLETELY REGISTERED AND INCORPORATED.

ESTABLISHED UPON THE PRINCIPLE OF MUTUAL LIFE ASSURANCE.

GUARANTEE FUND, £50,000, IN 10,000 SHARES OF £5 EACH.

DEPOSIT, £1 PER SHARE.

It is not contemplated that any Call beyond the original Deposit will be required,

INTEREST AT THE RATE OF FIVE PER CENT. ALLOWED UPON THE PAID-UP CAPITAL.

The Policies issued by this Society will be absolutely Indisputable, and not liable to Forfeiture.

One Tenth of the entire Profits of this Society will be applied to a Fund, to be called the "Educational Fund," for the permanent Endowment of Schools, to which Proprietors of Five Shares and upwards, and the Holders of Participating Policies for £300 and upwards, will be entitled to nominate Scholars.

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COMMERCIAL BANK OF LONDON.

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EDWARD KELLY HARRIS, Esq., 52, Lincoln's-inn-fields.

Notwithstanding the many novel and valuable features recently introduced as naturally connected with the system of Life Assurance, and the universality of the application of its principles to the various concerns of life, it is remarkable that no well-digested system has been propounded, with the view of rendering its advantages more acceptable to the public, and strengthening the increased desire on the part of individuals and heads of families to provide for the future, by making that provision also contributory to the wants of the Children of the Assured during the lifetime of the Policy Holder.

The National Provincial Life Assurance Society has been established with the view of promoting a greater extension of the principles of Life Assurance generally, and, by applying the principles of Mutual Aid and Co-operation to individuals in every class and condition of life, to secure a system of Education to the Children and Relatives of its Share and Policy Holders.

To effect this truly national and laudable object, and to promote the growing spirit of mental progress on the broadest and most tolerant principles, suited to the highly intellectual acquirements of the present times, a portion of the profits, at each division, derived from the business of the Society, will therefore be set apart for the permanent Endowment of Schools, in which the Shareholders of the Society, and persons assured therewith, will be allowed to nominate Scholars.

This Society is established upon the principle of Mutual Assurance, according to the Assured all the advantages of the Mutual principle, without the personal liability of its Members, and with the security of a Guarantee Fund of £50,000 divided into 10,000 Shares of £5 each. No liability is incurred beyond the amount of the shares actually subscribed for.

It is provided by the Deed of Settlement that at each division of profits, to be made annually after the first five years of the existence of the Society, that out of every One Hundred Pounds of profit made there shall be appropriated and applied:—

- First.—To the Members on the participating scale, either by a reversionary addition to their Policies, by a reduction of their future premiums, or by a cash payment 75 per Cent.
 - Secondly.—To the creation of a Fund for the permanent Endowment of Schools, to which Proprietors of Five Shares and upwards, and the Holders of Participating Policies for £300 and upwards, will be entitled to nominate Scholars 10 per Cent.
 - Thirdly.—To a Fund for the purpose of redeeming the paid-up capital of the Society, together with a bonus of £100 per Cent.; thenceforward the whole of the profits (with the exception of 10 per Cent., which will be applied to the "Educational Fund" until such Fund shall have amounted to £500,000) will be divided amongst the assured 5 per Cent.
 - Fourthly.—To the Shareholders 10 per Cent.
- The Policy Holders of £100 and upwards, on the participating scale, will be allowed to vote with the Proprietors at the Annual Meetings, in the election of the Directors and Auditors.

Among the many advantages offered by this Society is the assistance rendered to the Assured, who from temporary difficulties may be unable to pay the premium when it becomes due, and thus, in other Societies, would incur the forfeiture of the Policy, and the loss of the Premiums already paid. The National Provincial Life Assurance Society offers this peculiar advantage, viz., after the payment of three full annual premiums, they will be allowed to borrow as often as the value of the Policy will admit (at £5 per cent. interest), in every case a sufficient sum to pay the premium, and thus keep the Policy in force; such premium and interest to be deducted from the Policy when the Assured dies. The Policy Holder, however, will have the option of freeing his Policy from the debt at any time, by paying the amount due.

Another important advantage offered by this Society is, that, in the event of an Assurer becoming unable to continue the Payment of Premiums, he will, by the surrender of his Policy to the Society, be granted by the Directors another Policy of less amount, but equivalent in value to the Premiums already paid, and exonerated from any future payments.

INDUSTRIAL BRANCH.

The Directors of this Society, in addition to the ordinary business usually transacted by Life Assurance Societies, have formed a distinct Branch for the Industrial Classes, embracing every system of Life Assurance, and for that purpose have caused extensive tables to be prepared, which will combine the interests of every class of Assurers in a manner more comprehensive than has hitherto been attempted by any similar Society.

Every variety of Life Assurance business transacted.

Medical Practitioners paid by the Society.

The Lives of Invalids Assured at rates adapted to the circumstances of each case.

Loans granted on Personal Security in connection with Life Assurance effected with this Society.

The usual Commission allowed to Solicitors and Agents on the introduction of business.

J. W. SPRAGUE, Manager.

ADVERTISEMENTS.

ATHENÆUM LIFE ASSURANCE SOCIETY,

30, SACKVILLE STREET, LONDON.

Established for the Assurance of the Lives of Authors, Painters, Sculptors, Musicians, persons connected with every Art and Science, and the Public generally.

INCORPORATED BY ACT OF PARLIAMENT.

**CAPITAL £100,000, IN SHARES OF £1 EACH, TO BE PAID UP IN FULL.
WITH POWER TO INCREASE TO A MILLION.**

PROSPECTUS.

In ushering before the world for its consideration and patronage any addition to a subject previously well known, it is generally expected and required that there should be at least an appearance of novelty, although the subject itself is incapable of receiving any material improvement. The projectors of this Society, however, from experience and correct calculation, having discovered new principles and features in Life Assurance, so peculiarly adapted to the feelings, views, and wants of literary men, artists, musicians, and all persons connected with every branch of art and science, are convinced, when such advantages become known and appreciated, the ATHENÆUM must take the lead amongst those Societies which are ever on the watch to achieve new and beneficial results for all who have confidence in their exertions.

Men of letters and the liberal arts are too generally regarded with censure rather than with commiseration, on account of the unfortunate circumstances so often attending their worldly affairs, and which have unjustly given them a character for improvidence; yet few persons in the active pursuits of business can form a proper notion of the many causes which prevent the student, the scholar, and the secluded artist from being so fortunate as themselves; nor is it here considered fit to analyse such causes, or set right such notions. The object of this Society, therefore, is to allow the man of letters and the artist to indulge in that dreamy existence so peculiarly his nature, and so essential to the development of his talent, and give protection and provision where so much required. For while this urged improvidence is admitted to be no consequence of selfishness,—it being well known that in no other class is disinterested nobleness of spirit so often and unequivocally exhibited,—yet no means have hitherto been devised to arrest this censured characteristic. This Society, therefore, wishes to open an independent course for the consideration of

men of letters, art, and science, especially as it is brought before them with associations of their own, and in no way assuming the offensive and humiliating position of charity.

Many a great work has been left unfinished, many a teeming brain has given way before those powerful foes to genius, anxiety and fear of the future! How often has the man of talent paused and trembled, while he has contemplated the destitution of his family, and all that is dear to him, if overtaken by death in the midst of his projects; and while Life Assurance is suggested to obviate such afflicting thoughts, then the apprehension that, should adverse circumstances prevent punctuality in his annual payments, the sacrifice already incurred will have been in vain. This Society cheerfully and with confidence points to the provision it has made for such cases, where help will be given, and every encouragement afforded to sustain the claims upon it unforfeited and uninjured.

To the young, the principles of this office will be peculiarly beneficial, the amount of premium being so trifling; while in the course of time the participation in the profits of this Society must return them such sums, that all they may have advanced in their early years will not only have passed again into their own possession, but a property established that will be of value during life, or a handsome bequest in case of death.

It is therefore hoped, by the establishment of this Society, to remove from men of letters and artists the reproach that in so many instances has attended them, to enforce a more ennobling appreciation of their worth, to prevent their becoming objects of charity, which humiliates as much as it relieves; and that, in the midst of their triumphs, and while in the possession of health, there shall not be seen in the dim perspective the almshouse or the prison.

NEW FEATURES OF THIS OFFICE, TO WHICH ATTENTION IS PARTICULARLY REQUESTED.

This office will introduce a system for obviating an acknowledged difficulty in the way of propagating the advantages of Life Assurance. In fact, the principal objection to adopt its blessings, even by many who thoroughly appreciate its value, is the possibility of forfeiting their policy by being unable to meet the payments when they become due; and, on the part of the office, it has been an unwise, not to say an unjust, proceeding to compel a strict observance of this provision. It has been unwise, for the reason, that, by carrying out this measure to the letter, such enormous profits have arisen from it as to become unwieldy and useless; since the management of them engrosses such attention and trouble as to make the office careless of extending its business. It has also been unjust; for, instead of rewarding prudence and self-sacrifice by assisting, even for a while, such strenuous exertions for the accomplishment of a noble object, or by bestowing some equivalent for past privation, it passes by such virtue unrecognized and unrewarded, and thus perverts the very principle from which Life Assurance emanated. To remedy as far as possible this defect, there will be a fund instituted by the Athenæum, called the Provident Fund, to be raised by the mutual contributions of the members themselves, on the following original and beneficial plan:

The first five hundred persons who desire to participate in this benefit will leave a tenth portion of their policies for the purposes of this fund, which will be thus applied:—

1st. To the keeping up the policies of such members who shall have previously paid five annual premiums. The aid afforded by this fund for that purpose will not be continued for a longer period than five consecutive years, and to be returned to the Society at the convenience of the assured, with interest at the rate of 25 per centum per annum, or the sum advanced may be deducted with such interest from the policy when it shall become a claim.

2nd. To grant small loans on the deposit of the policy to those members who may require temporary assistance.

3rd. To such qualified members who really need it, the Directors will have the discretionary power of granting such an amount as will purchase in the Society an Annuity, not exceeding £100, during the lives of themselves and widows; and

4th. To divide among the surviving members, at the end of twenty years from the date of the list being closed, the whole of the remaining and unapplied portion of the fund.

The rates of premium to secure these important advantages are lower than those in many first-class offices where no such privileges exist. For example, to assure £1,000 at the age of 30 in the Equitable would cost £26 14s. 3d. per annum; while a premium of £26 5s. in this office would assure, in addition to £1,000 the sum of £100 to the Provident Fund.

It is also determined to provide, as far as practicable, a similar fund for such of the original Shareholders as may become distressed, by applying a portion of the entire profits of the Society for such purpose.

One important feature of this society, and which has not yet been adopted by any other Assurance Company in this country, although generally in operation on the Continent, is the plan of granting policies made payable to the holder. The difficulty, expense, delay, and annoyance so frequently experienced in pecuniary transactions in the assignment of policies, have long been felt as a grievance; and the Directors of this Society, having given this subject much consideration, and acting under

the advice of competent legal authorities, are resolved to give the assured the option of receiving policies payable to the holder. The advantages of these policies must be obvious, as their simple construction will give greater facilities in their temporary or permanent transfer to a third party. This has been so fully appreciated on the Continent, that policies in any other form are absolutely refused by the great bulk of assureds. The publicity, so frequently annoying and detrimental, in the assignment and re-assignment of policies in pecuniary transactions, as well as the delay and expense consequent on the old system, have been so often complained of, that the Directors of this Society believe that the plan of making policies payable to the holders must eventually be generally adopted in this country.

A moment's reflection is sufficient to show that the great bulk of the middle and professional classes of this country stand as much in need of provision against the casualty of permanent sickness as against that of death; while statistical inquiries have proved that nearly 5 per cent. of the adult population of this kingdom are constantly incapacitated from following their occupations, and a great portion at advanced periods of life become permanently invalided. Therefore, to meet so important a desideratum, this Society will, on very moderate terms, grant Policies payable during the time of very long sickness, or when accident or any other casualty shall prevent the assured obtaining his livelihood.

To conclude, the Directors wish it emphatically to be understood, that there are no privileges or advantages in this Institution in which the public do not fully and equally participate, as the appeal is to them; and no benefit can accrue to any class, however worthy or respected, without the co-operation and support of all.

This is the only Society that issues Policies absolutely indisputable.

Claims paid immediately on satisfactory proof of death, and the exhibition of such documents as are required by law.

Seventy per cent. of the profits divided among those assured on the participating scale, thus securing all the real advantages arising from a Mutual Association, without incurring any legal or pecuniary liability whatever.

The first division of profits will take place at the end of seven years, and thenceforward every five years, and may be applied as a bonus, to be added to the sum assured, in reduction of future premiums, or in cash.

Diseased lives assured on equitable terms, the extra premiums being discontinued on restoration of the assured to permanent health.

Members of consumptive families assured at equitable rates. Assurances may be effected from £50 to £10,000.

Endowment Assurances granted, payable to the Assured, should he live to a given age, or to his representatives should he die before.

Immediate and deferred annuities on very favourable terms. No entrance fee charged.

The extra premiums for residence in foreign climates are lower than in other offices, and are founded on data.

Assurances may be effected in one day, the medical officer being in attendance.

Interest at the rate of 5 per cent. allowed on the paid-up capital. Medical men remunerated in all cases by the Society.

A liberal commission allowed to all who introduce business.
HENRY SUTTON, Manager.

ORIGINAL SERIES.

ON THE MANUFACTURE OF GLASS.
By M. REGNAULT.

(Continued from page 124.)

ON COLOURED GLASSES, AND THE ART OF
PAINTING UPON GLASS.

Glass dissolves the greater number of metallic oxides without suffering any diminution of transparency, but with the assumption of peculiar colours. On this property depends the art of making coloured glass; all that is necessary being the addition to the colourless vitreous bases of the determined amount of colouring oxides. Nevertheless, in many instances specific precautions are requisite. The protoxide of iron, $\text{Fe}^2 \text{O}^3$, colours glass of a deep green; the sesquioxide of iron, $\text{Fe}^3 \text{O}^3$, yellow;—the oxide of copper, $\text{Cu} \text{O}$, and the oxide of chrome, $\text{Cr}^3 \text{O}^3$, yield, both of them, fine green tints, but of different shades. The oxide of cobalt, $\text{Co} \text{O}$, yields a blue colour; the sesquioxide of manganese, $\text{Mn}^2 \text{O}^3$, a violet colour. A mixture of equal parts of oxide of cobalt and of oxide of iron colours glass black. The suboxide of copper, $\text{Cu}^2 \text{O}$, imparts to glass a very fine tint of red, but so intense as to destroy all transparency if it exceed a few hundredths of the entire mass. A purple tint is obtained by mixing a small quantity of oxide of tin with flint glass reduced to powder, saturating the mass with a solution of chloride of gold, drying it, and fusing in a crucible.

When the metallic oxide by the use of which the colourization is desired is susceptible of deoxidation in the furnace, such as the sesquioxide of manganese, a little nitre is added to the fused mass for the purpose of yielding the necessary supply of oxygen. A very fine yellow tint is obtained by smoking a fused mixture that would, without this smoking, have produced a white glass; various shades of yellowness may be produced by varying the degree of the smoking operation.

When coloured glasses are required from the mixture of metallic oxides possessing a very strong colouring agency, it is difficult to obtain the exact result by merely adding the metallic oxide to the whole fused mass. Instead of which the operation termed in English *flashing* is had recourse to, which is a sort of veneering process, performed in the following manner:—Two pots are placed in the furnace; one containing colourless, the other coloured, glass. The operator collects first on the extremity of his blowpipe a mass of the proper size of *colourless* glass, which, being allowed to acquire the proper consistence, is plunged into the mass of coloured material, which, therefore, collects around the former in a coating of the desired thickness. The operator then expands the veneered mass in the ordinary way, and obtains a compound bubble, colourless inside, coloured outside, and from which, by proper manipulation, articles of various shapes can be made.

Not only is the process of flashing useful for imparting the desired tint of colour, but it forms the basis of another variety of ornamentation, as can easily be explained. If the outside layer be cut or ground away it is quite evident that the underlying layer of colourless glass would be made to appear through; and, pursuing this operation on various ornamental forms, the operator produces the most beautifully variegated effects. In this way not only may glass of one but of two or more flashed coats be treated, each coat being of a different colour, and, by grinding down to varying

depths, ornaments of as many colours may be worked out, as the compound bubble of glass possesses different layers.

The operation of painting on glass is performed by the means of vitreous pigments of great fusibility, employed according to a process which I will now describe. In the first place, a colourless and very fusible basis must be made with certain vitreous materials, which vary according to the nature of the colouring oxide to be added. For the greater number of them a mixture is employed of 2 parts of quartz, $2\frac{1}{2}$ of oxide of lead, and 1 part oxide of bismuth; but, as certain colouring oxides are affected by the oxide of lead and bismuth—in this case a mixture of 2 parts quartz, $1\frac{1}{2}$ of fused borax, $\frac{1}{4}$ part of nitre, and $\frac{1}{4}$ part of carbonate of lime is substituted. With these substances the colouring oxide is mingled intimately, and the whole being fused is reduced to an impalpable powder, which, being ground with turpentine, forms the pigment to be laid on with a brush in the ordinary manner of painting. The sheets of glass thus painted are now exposed in a muffle-furnace to the degree of heat necessary to effect the fusion of the painted layer, but insufficient to melt the glass plate, by which means the colour becomes well incorporated with the ground.

Generally speaking, the groundwork of various points of the picture is formed of a plate of glass stained throughout of the predominant colour, and the contours and shadows are painted on one of the faces. The different pieces of glass thus treated are now collected with intelligence, and joined together by means of leaden bands, each bit of glass receiving a form corresponding with the general contour of the figure to be indicated. The face of the glass which has received the painted deposit is placed on the outside, so that it may be viewed by transmitted light through the mass of coloured body.

Analysis of Glass.—I now come to speak of the analysis of glass, which is conducted in the following manner. In the first place, let us assume that the glass to be operated upon contains—or that it *may* contain—silica, potash, soda, lime, magnesia, alumina, oxide of iron, oxide of manganese, and oxide of lead.

About 5 grammes of the specimen to be analyzed are to be reduced to powder, and to be mixed intimately with about three times its weight of pure carbonate of soda. The weighing operation, as well of the glass as of the carbonate of soda, is conducted in a platinum crucible, to which, after weighing, the heat of a powerful argand spirit-lamp or gas-flame is applied until the mass becomes completely fused. In conducting the fusing operation it is well to envelop the whole crucible in a chimney of sheet iron, slightly larger than itself; by which means not only is a powerful current established, but the flame is made to embrace, as it were, the crucible, and thus largely to add to the heating effect. The mass is to be kept in a state of fusion for the space of about twenty minutes, after which period it is to be allowed to cool. If a small crucible be employed, this fused alkaline lump may easily be detached at the end of the operation by the application of gentle pressure with the finger and thumb in various directions. The mass, when separated, is to be received in a capsule of porcelain containing a certain amount of water, the capsule being covered by an inverted funnel. The crucible is to be thoroughly washed out with a mixture of nitric acid and water, and the washings added to the fused mass already put into the porcelain capsule. The nitric acid causes the whole to be dissolved with effervescence, and the sides of the funnel prevent any loss which might otherwise take place, by small pellicles of the contents being projected through the act of effervescence. Finally, the mixture is to be rendered distinctly acid by the addition of a sufficient

amount of nitric acid, and evaporated to dryness by a heat not exceeding 600° F. On the mass thus dried nitric acid considerably diluted is now to be poured, and the whole is to be allowed to stand at rest for some time in the cold; finally, it is to be diluted with water. By this treatment all the metallic oxides become dissolved, the silica alone remaining as an insoluble residue, which being collected on a filter, well washed, and dried, its quantity can be easily estimated by weighing. Through the filtered liquor a current of sulphuretted hydrogen gas is now to be passed, by which treatment all the lead is precipitated in the condition of sulphuret. Towards the end of the operation the mixture is to be heated to boiling, the current of hydrosulphuric acid being still maintained, by which means the deposition of sulphuret is greatly facilitated. This sulphuret being collected on a filter and weighed, the filter is burned in a platinum crucible. The residue is now to be treated by nitric acid mixed with a little sulphuric acid, by which procedure all the lead present is converted into sulphate of lead; and, this transmutation being effected, the sulphate is heated to redness, allowed to cool, and finally weighed, when, from the data supplied by its weight, the original amount of oxide of lead admits of easy calculation.

To the filtered liquor, thus freed from silica and oxide of lead, a solution of hydrosulphate of ammonia is now added, by which agent we effect the separation of alumina, iron, and manganese. The wet and compound precipitate thus obtained we now dissolve in hydrochloric acid, and effect a separation of the substances contained in the following manner:—To the hydrochloric acid solution strongly acidulated ammonia is added, when the alumina and oxide of iron alone precipitate. These are collected upon a little filter, and immediately dissolved by washing the filter with some drops of hydrochloric acid much diluted. Into the solution thus formed is now poured an excess of caustic potash, which precipitates the hydrate of peroxide of iron, and redissolves the alumina. The former is now to be well washed by boiling water, because it retains with very great obstinacy a small quantity of potash. We now come to the alkaline liquor containing alumina, which liquor we supersaturate by hydrochloric acid, and effect the precipitation of the alumina by pouring into it, after having been allowed to cool, a quantity of hydrosulphate or carbonate of ammonia. To separate the magnesia and oxide of manganese existing in the original solution, we add a little hydrosulphate of ammonia, which effects the deposition of sulphuret of manganese.

The liquor now merely containing lime, magnesia, and alkaline salts, is boiled to expel the excess of hydrosulphate of ammonia; any lingering trace of which substance that may remain being decomposed by a little hydrochloric acid. Finally, the liquor is supersaturated by oxalate of ammonia, which throws down the lime in the condition of oxalate of that base.

The magnesia contained by the glass is not yet precipitated, on account of the presence of ammoniacal salts in the liquor.

The solution being now concentrated by evaporation, an excess of carbonate of soda is added, and the whole is evaporated to dryness for the purpose of decomposing the ammoniacal salts, and dissipating the ammonia in the state of carbonate. Water is finally added to the dried mass, by which treatment every thing but the insoluble carbonate of magnesia is dissolved.

In the analysis just described we successively determined the presence of the various substances of which glass is composed, with the exception of the contained alkalis, which

must be discovered by a special operation. For this purpose the glass to be analyzed must be attacked by hydrofluoric acid, which effects its solution most completely.

With this object the liquid acid may be employed, but, as it is difficult to procure the latter, the preferable plan consists in preparing the necessary quantity of the acid at the time of employing it, in which case the mode of procedure is this:—Into a little retort of platinum is put some finely-powdered fluor spar mixed with sulphuric acid, and a platinum tube is attached, bending down at its further extremity into a platinum crucible containing the glass to be analyzed, reduced to an impalpable powder, and mixed with water.

To prevent the needless evolution of vapours the platinum crucible is covered with a piece of foil, furnished with two holes, through one of which the tube is made to dip; through the other a little platinum spatula is inserted for the purpose of agitating the mass. The apparatus being arranged as described, heat is applied to the retort, hydrofluoric acid is evolved, and, passing into the moistened powdered glass, becomes dissolved, and attacks the vitreous matter, causing the evolution of fluo-silicic acid gas. During this operation the mass is from time to time to be stirred with the little spatula. As soon as the glass has been completely attacked the crucible is slightly heated to drive off the excess of acid, and to evaporate the water. Sulphuric acid is now to be poured upon the residue, by which means all the hydrofluoric acid is driven off, and the oxides changed into sulphates. Heat is now applied for the purpose of evolving sulphuric acid, and the residue is dissolved in water, which dissolves everything except the silica and the resulting sulphate of lead. The liquor is now filtered, and an excess of carbonate of ammonia poured in, which precipitates the alumina, the lime, the oxides of iron, and a portion of oxides of manganese and magnesia. To the solution a little hydrosulphate of ammonia is now added, which throws down all the manganese. The liquor being filtered contains nothing but the alkaline salts, a little magnesia, and some salts of ammonia. It is evaporated to dryness; the residue, being made red hot, is weighed, and the alkaline bases are weighed in the state of sulphates. At this period of the analysis the magnesia is not taken cognisance of, this being left until a farther stage.

The potash is now separated by means of bichloride of platinum, and the amount of soda ascertained by the difference.

The magnesia is now sought for in the solution which remains after the precipitation of the double chloride of potassium and platinum. For this purpose the platinum is separated by hydrosulphate of ammonia, and the filtered liquor is evaporated with an excess of carbonate of soda. Water now being added, the carbonate of magnesia remains undissolved. Instead of this process, the magnesia may be precipitated by phosphate of ammonia.

(To be continued.)

PROGRESS OF SCIENCE AT HOME AND ABROAD.—TRANSACTIONS OF SOCIETIES, COMMUNICATIONS, &c.

PARIS ACADEMY OF SCIENCES.

Sitting of September 8.

ON GALVANOMETRY.
By M. JACOBI.

M. Jacobi read a paper in which, after reviewing the various researches which up to the present day had been

made in galvanometry, both by several eminent experimentalists, and by himself, in conjunction with M. Lenz, he particularly dwelt on some points to which he considered the attention of the French philosophers should be directed, and more especially to the establishment of a conventional measure for the purpose of facilitating the comparison of the indications furnished by galvanometrical instruments with each other. An account of the researches of M. Jacobi on this subject have from time to time been laid before the Academy of Sciences at St. Petersburg; the object of the present communication is to give a summary of those researches, with the addition of more facts to complete the series.

M. Jacobi commenced with a sketch of the researches which had been made in this branch of physics since the time that galvanism and electricity had been regarded as one science, or, in other words, since the period when a great number of isolated facts were classed under one point of view, and submitted to exact measures. In the foremost ranks of those who have contributed to these developments he naturally cited Ampère, who the more deserves this place, as M. Jacobi well remarked, inasmuch as "the thirty years which have since rolled away have beheld a full confirmation of those philosophic views with which this illustrious savant submitted to a geometrical analysis all the new and astonishing phenomena of electro-magnetism, to which his sagacious mind, itself guided by that same analysis, added others still more remarkable." Still, however, in the labours of Ampère the only point of consideration was a given current. It was M. Ohm who made known the conditions, the laws to which the force of this current is subject. Unfortunately, however, the enunciation of these laws was made in language so obscure, and in a manner so abstruse, that they remained in obscurity, until the period when the labours of M. Jacobi and Lenz brought them to light, and by their own researches gave them an extended and useful development. Based on these laws, the experiments undertaken by M. Jacobi and Lenz to determine the principles on which electro-magnets should be constructed, in order to obtain from them a maximum effect, are capable of receiving a more general interpretation, and of being expressed by formulæ as simple as they are exact. M. Jacobi remarked that the construction of magneto-electric machines, and of electro-magnetic machines, applied as motive powers, cannot be judiciously effected without recourse being had to a consideration of these laws. "If, for instance, it be required to construct an electro-magnet, the dimensions of which, with its coil, are given, we may immediately know," said M. Jacobi, "by a very simple geometric construction, which I have not yet published, but which I will communicate, what part of the total thickness should be occupied by the armature, as well also as that occupied by the coil. Again, in the choice of the wire of which this envelope should be formed, laws will no longer be wanting; it is well known that, in order to obtain the maximum effect, the thickness of the wire should be, if possible, such that the resistance of the coil should be half of the total resistance of the circuit. With all these applications before us, it will be seen how necessary it is to be first of all provided with suitable means for measuring the currents with facility and correctness, and then to agree upon a unity for the force of the current, and a unity for the resistance, which might be generally adopted by experimenters, and by constructors of machines. This can only be effected by speaking a language universally understood."

M. Jacobi states that, as regards the means of increasing the force of the current, they appeared to him very insufficient in the actual state of the science, and that he can neither give his exclusive approbation to the sinus compass-needle, nor to that of the tangents of M. Pouillet or M. Nervander, nor to the torsion-needle, nor to the method of M. Gauss, nor even to the balance of M. Becquerel.

As regards the choice of a unity for the current, two different ways present themselves. Of these, the method invented by M. Gauss, to express in absolute measure the force of terrestrial magnetism, may be first noticed; a method which has been adapted with success by M. Weber to the

measure of galvanic and electro-magnetic currents. These methods, however, have not yet been sufficiently simplified, and require means which are at present found only in the hands of astronomers, or in well-organized philosophical institutions. In the second place, since the discoveries of Mr. Faraday, and especially since the publication of the law promulgated by him on the proportionality of the force of the current and the electrolytic action, we had hoped that the chemical decompositions would afford us simple means of expressing the force of a current by an electro-chemical unity; up to the present time, however, this hope has not been realized, and the law we have referred to has never been rigorously proven.

The voltameter of platinum plates and detonating gases cannot be regarded as deserving great confidence, since the reabsorption of gas which takes place in that instrument and the circumstances which favour it have been fully understood. M. Jacobi has therefore been led to have recourse to the decomposition of sulphate of copper by which to fix the unity of the current, although this substance, according to Mr. Faraday, does not possess the characteristics of a primary decomposition. The preliminary experiments made on this point gave sufficiently satisfactory results, but M. Jacobi has since ascertained that the decomposition of sulphate of copper is not alone dependent on the force of the current, but that it also depends on the degree of concentration of the solution of sulphate employed: even in very small differences of strength the electrolytic effects produced by the same current varied as much as two and a half per cent.

From what has been said it will, therefore, be seen that neither the decomposition of acidulated water, nor that of sulphate of copper, will serve for the purpose of fixing with exactness the unity of the current. It is, however, well known that it would be useful, as well for scientific researches as for practical applications, to have a galvanometric compass-needle, the limbs of which shall not be divided into degrees, but into multiples of an electrolytic decomposition which has been chosen for unity. In this manner, in electric telegraphs, in galvano-plastic apparatus, in electro-magnetic machines, the deviation of the needle interposed in the circuit will immediately indicate, for instance, the quantity of zinc electro-oxidized during twenty-four hours in each element of the battery, and this shows the daily expenditure.

M. Jacobi recalled to his recollection the circumstance that some years since he had written to M. Poggendorff, of Berlin, a letter, in which he said, "You are well aware how important it would be if, in our galvanic researches, we could express the measures of the currents employed by some electrolytic, and consequently absolute, measure. It will suffice for this purpose that the compass-needles be made to agree with electrolytic measures, &c. Nevertheless, it does not appear to be less important that we should be able to express the resistances by one and the same unity, which shall be conventional, and not absolute; meanwhile it is very probable that the resistance of the metals, even chemically pure, presents differences not explained alone on the ground of differences of dimension. Supposing that you have brought your agometers and your multipliers to coincide with the resistance of a copper wire of one metre in length, and one millimetre in diameter, we could not be certain that your copper wire and ours possessed the same coefficient of resistance. All these difficulties would disappear if we chose arbitrarily a certain wire, which might be sent from one person to the other, requesting each to regulate the instruments with which he was in the habit of measuring the resistances thereby, and for the future to express them always by means of that unity."

To join practice to precept, M. Jacobi forwarded to M. Poggendorff with the letter, in a box, a copper wire well coated with mastic, to preserve it from the action of moisture, in order that it might be compared with the standard of resistance, as afforded by the instruments of the electricians of Berlin. This idea having been entertained by a great number of the German electricians, M. Jacobi now offered the same box containing the same standard wire to the Academy. The wire is of copper, it weighs 22.4932 grammes, is of the length

of 7.61975 metres, and has a diameter of 0.000667 metres. M. Jacobi further stated, that wishing to ascertain the degree of accordance obtained by measuring the same resistance repeatedly, and at different periods, he has found immense difficulties in obtaining satisfactory results by means of the agometer of his own construction, although that instrument appeared to him to be far preferable to the rheostat of Wheatstone. He then devised a mercurial agometer, a description of which was communicated to the Academy of Sciences at St. Petersburg; in this communication the results obtained were furnished, results which gave the most astonishing accordance. This communication contained also a discussion on the relative value of different methods which have been employed up to the present time to measure the resistance. "If," said M. Jacobi, "I add to what I have already said, that in the observations conducted with all the care possible I have succeeded in diminishing the probable error to the 0.000084th part of the total resistance, some idea may be obtained of the exactness of my mercurial agometer. I do not pretend to say that such an exactness is necessary in every case; more than that I know, that, particularly in practice, many circumstances occur which do not allow us to obtain results rigorously exact."

These researches of M. Jacobi are to be examined by a committee composed of MM. Becquerel, Pouillet, and Despretz, whose report, when received by the Academy, we will lay before our readers.

A few other communications were presented to the Academy, none of which possessed any features of interest.

REPORT ON THE NATURE AND PRODUCTS OF THE PROCESS OF THE DESTRUCTIVE DISTILLATION OF PEAT, CONSIDERED ESPECIALLY WITH REFERENCE TO ITS EMPLOYMENT AS A BRANCH OF MANUFACTURING INDUSTRY.

Made to the Right Hon. the Chief Commissioner of Woods.

By Sir ROBERT KANE, Director of the Museum of Irish Industry, Dublin.

A small blue book of 80 pages octavo on the above subject has lately issued from her Majesty's Stationery-office, containing the above report, as presented to both Houses of Parliament, by command of her Majesty. Although it is not so stated in the book, we conclude that this report is the result of a grant of £100, voted in the session of 1850, "towards defraying the cost of experiments on the products of peat, upon the suggestion of the Government of Ireland." If such be the case, we consider the report a somewhat unsatisfactory one, inasmuch as the experiments therein reported upon appear to have been confined to the one particular purpose of testing the accuracy of the statements made by Mr. Reece, with regard to the products stated by him to be obtainable from peat by a particular form, of destructive distillation,—statements on the supposed accuracy of which a public company has been formed, and a charter of incorporation obtained, for the purpose of carrying out on an extensive commercial scale the manufacture of the said products.

With the knowledge of the fact before us, that one-seventh part of the total area of Ireland, or 2,830,000 acres is bog-land, to say nothing of the thousands of acres of the same description of soil in other parts of the British isles, we have long wished to see a full, fair, and accurate investigation made of peat, and the purposes to which it could be usefully applied; and we therefore hoped that the late inquiry would have been extended beyond the limits of one particular process. As, however, this particular process has attracted considerable public attention—has formed a theme for discussion in the Houses of Parliament—and obtained the support of parties willing to risk a capital of £10,000 in the enterprise, we accept the report so far as it goes, hoping that on some future occasion the subject of the useful application of peat may receive a more extended investigation—

an investigation somewhat more commensurate with the importance of the subject.

In our further notice of Sir B. Kane's report we shall direct our attention to the general conclusions deduced by him from the experiments performed at the Museum of Irish Industry, more particularly to the first of those conclusions, in which it is stated "that the quantities of ammonia, wood spirit, and of so-called paraffine, fixed and volatile oils, stated by Mr. Reece to be obtainable by distillation from peat, do not appear to be exaggerated, as they fall within the results obtained in the Museum laboratory, and approach closely to the average results. That the quantity of acetic acid or acetate of lime stated by Mr. Reece and Dr. Hodges could not be obtained, the result of the Museum trials affording but from one-half to two-thirds of the expected quantity of that substance. That, further, the produce of paraffine may possibly be rendered much more considerable than that stated by Mr. Reece, through a more judicious treatment of the resinous materials of the tar than had been proposed by that chemist." From the table of average results obtained in the Museum experiments, given in the appendix to the report, it appears that the quantity of ammonia obtained was equivalent to 1.110 per cent. of sulphate of ammonia on the peat employed, whilst Mr. Reece's calculation was but 1.00 per cent.; the quantity of acetic acid obtained was equivalent to only 0.305 per cent. of acetate of lime, instead of 0.70, as stated by Mr. Reece; the quantity of pyroxylic spirit was 0.140, instead of 0.185; of paraffine 0.125, instead of 0.145; of volatile oils and of fixed oils, together 1.059, in the place of 1.199.*

One part of the report contains the account of some experiments undertaken at the Museum on the destructive distillation of peat, as performed in closed vessels, as in the ordinary method of carbonizing wood, &c. On reference to page 8 of the report we there find that the product of acetate of lime from this process was, on the average, but 0.280 per cent., or less, in fact, than that obtained in the Museum blast-furnace. Having operated on various kinds of peat on the commercial scale, and obtained very different results, we are led to doubt the correctness of those stated to be obtained in the Museum experiments as performed with closed vessels. Our own investigations also led us to consider the amount of pyroxylic spirit given as the result of the Museum experiments to be far too high. The fact is, that the scale on which the Museum experiments were conducted was far too small to afford results of any practical utility so far as regards the testing of any process as a commercial manufacture, whilst the mode in which the experiments were performed—that of starting each time with a cool retort—a mode perfectly impossible in a manufacturing point of view, seems still further to divest the results of all practical utility; the comparative production of acetic acid, pyroxylic spirit, &c., depend much on the temperature employed, and its due regulation. As for the imitation blast-furnace used in the Museum experiments, the same objection as to the smallness of the scale on which they were performed holds good; nor do we consider an iron furnace with its cover "screwed down" as at all a fit representative of the brick blast-furnace to be commercially employed by Mr. Reece. In the one case each charge of materials would be worked off separately, but in the case of consuming 60 tons per diem in one furnace there must be a continual opening and feeding of the furnace, with the introduction of large quantities of atmospheric air, which may probably very much affect the results obtained.

Again, there does not appear throughout the report that any attempts were made to employ the same kind of peat as that used by Mr. Reece, and especially in the same condition. The report states that the produce of the distillation of twenty-seven different varieties of peat may be considered to be almost the same. This may or may not be; but, although 100 tons of dry peat, such as is used for household purposes, which was the condition of the peat employed in the Museum experiments, may furnish the products named in the Peat

* The statement given in the body of the report as to the quantities of paraffine, and fixed and volatile oils, differs from those mentioned in the table, page 70 (Appendix). We have assumed the latter to be the correct figures.

Company's prospectus as set forth at page 27, yet 100 tons of recently-cut peat would not afford any such like results, for we find it stated by Mr. Reece, at page 38, that 100 tons of fresh bog peat will yield at the outside but sixteen tons of dry peat, such as is used for fuel, and of the character and condition of that on which the experiments at the Museum were performed.

According to Dr. Hodges, the peat used at Newtown Crommelin had been put up in stacks for use, and that in the district where the experiments were made the cost of the peat employed would not exceed 2s. per ton. This, however, gives us no information as to the real condition of the peat employed, nor are we enabled to ascertain whether the cost of 2s. per ton has reference to the peat in its fresh or its dry condition. Mr. Reece's letters give no information on this head, nor does he inform us in what state he proposes to use the peat in his blast-furnace operations consuming 100 tons per diem. If we put the peat in a dry condition, similar to that used in the Museum experiments, at 4s. per ton (it must be borne in mind that it requires six tons of fresh peat to make one of dry, according to Mr. Reece), and assume the allowance made for wear and tear, wages, labour, cost of sending to market, &c., to be correct (items, of course, open to criticism), and simply add the cost of lime, of materials for purifying the paraffine, and of interest or capital employed, and, on the other side, take the average products as obtained at the Museum, calculating them, too, at the full market price stated, deducting only a reasonable discount on about £10,000 worth of the fatty and oily products, the commercial value of which can only be guessed at, and the usual allowance for bad debts, &c., we say that, if we compare this debtor and creditor account, we shall find that, instead of 100 per cent., the real dividend on the capital invested will be, if anything, but very small.

In a postscript to one of Mr. Reece's letters to Sir R. Kane, at page 33, we notice the broad assertion made, that *continental peats* differ very essentially from the Irish, in containing no acetic acid; and in the account of some experiments stated by Mr. Reece to have been performed by him on large quantities of peat obtained in the neighbourhood of Paris, page 34, "acetic acid, *not a trace*," is mentioned in the list of products obtained therefrom, although the process of close distillation was in this case employed.

In his "Cours de Chimie Appliquée," M. Payen states that the peat obtained at La Vesle, near Rheims, yields, by carbonization on the large scale, 45 per cent. of tar and acetic acid; and he quotes the list of products of the carbonization of peat as stated by Klaproth to be obtained from the Mansfeld peat, in which water and acetic acid figure for 12 per cent.

We must confess that we cannot find in the letter of M. Pelouze, contained in the prospectus of the company, any trace of the unquestionable testimony said to be borne by that gentleman to the accuracy of the science involved in Mr. Reece's investigation; nor were we ever aware of the fact that sulphate of ammonia is a product obtainable from peat. The statement also that whilst in ordinary cases acetate of lime is made by dissolving carbonate of lime in acetic acid, it is by Mr. Reece's process distilled from the peat, we consider a poor compliment to the chemical knowledge of the directors, one of whom is a manufacturing chemist of some standing, and practically acquainted with the manufacture of the article in question.

Again, the naïve remark of Sir Robert at page 14 of the report is too good to be allowed to pass unnoticed:—"That the quantity of acetate of lime expected by Mr. Reece is more than double that which was in average obtained at the Museum, unless the commercial acetate of lime calculated for by Mr. Reece shall contain such excess of lime, et cetera, as shall render its weight double that which the pure article calculated in the result of the Museum trials should have. This latter circumstance may possibly explain the difference. It may, therefore, be admitted that the statements made as to the quantities of these bodies obtainable from peat (acetic acid, of course, included) have not been exaggerated, and, indeed, are such as should immediately be inferred to be obtainable from a body of its constitution compared with coal and wood!"

This puts us in mind of an answer we once received from the foreman of an acetate of lime manufactory, in reply to the question, what is the quantity of acetate of lime obtained from a given quantity of rough acetic acid. The answer was, from 120 to 180 pounds, according to the customer.

As regards the practicability of the plan proposed to be carried out on the commercial scale—the condensation of the liquid products—the purification of all the products—the utilization of the gases, &c.—enough is said in the report to throw a doubt on those parts of the scheme, without the addition of any practical remarks of our own. We are fully convinced that the quantity of pyroxylic spirit named is much more than will be produced on the commercial scale. Again, the addition of large supplies of sulphate of ammonia, acetate of lime, wood spirit, &c., to those already in the market, will have the tendency to depress prices, and thus seriously affect the credit side of the company's ledger. Taking all these points into consideration, we fear that, as a commercial speculation, the establishment of the British and Irish Peat Company will prove abortive.

As for the report, it contains the results of various experiments on peat conducted in a certain way, and as a record of such experiments and the results obtained it is useful; but as regards its utility, in reference to the question at issue, it is not, in our humble opinion, of the slightest value.

After all, the process of burning peat in a blast-furnace, and of obtaining therefrom ammonia, &c., is not Mr. Reece's, the process having been patented by Mr. Hills, of Deptford, in August, 1846; whilst the date of Mr. Reece's patent is January, 1849.

Chemical Record

AND

DRUG PRICE CURRENT.

SATURDAY, SEPTEMBER 13, 1851.

M. SOYER'S SYMPOSIUM.

FRIENDS to the creature comforts of life when properly administered—discouraging vegetarianism, teetotalism, and every other kind of culinary heresy to which the fanatical tendencies of these latter times have given birth—holding good eating and drinking to be something beyond a mere scheme for elaborating flesh and blood, and when properly used and rightly understood, to be capable of elevating the intellectual part of man into the region of beautiful ideas and pure thoughts—maintaining the above sentiments as we do, and ready to prove them by arguments which would be totally overpowering, our friends will not be surprised at our boldness in enunciating the editorial canon—that culinary excellence is a very high development of chemical art. If a cook be not a chemist he is nobody. To tell a gustatory artist he was no chemist would be equivalent to telling one of the softer sex she was no lady—a judge he was no lawyer—a general he was no soldier—a schoolmaster he was no scholar.

Holding it, then, to be proved beyond all chance of contradiction that a cook is a chemist, or *nobody*, we shall next assert, and hope to be implicitly believed, that M. Soyer is a cook.

Now, we by no means wish to hurt M. Soyer's feelings by telling him he is no chemist; indeed we should believe our own sentiments by saying so, seeing that this gentleman has given evidence of his chemical genius in the construction

of many ingenious instruments for philosophical cookery. But we say this, and say it advisedly, that in the preparations which, at the cost of six and sixpence, he ushers before his victims at the Symposium—(his *audience* we might have said, for they are regaled with the cheering vibrations of a Chinese gong)—and which are dignified by the name of a dinner, we recognise more bad chemistry—a grosser violation of all the principles of gustatory excellence—a more daring reliance on the prestige of a great name than ever fell to our lot before. Then as to the wine, it is execrable: few persons are bold enough to get to the end of a bottle, but walk away chilled and doubled up under the influence of the tartareous contents of those long-necked flasks.

We submitted to this infliction *once*, and, although sadly disappointed to find the great artistic fame of the renowned Soyer so awfully belied, we received our recompense in a train of philosophic meditations to which the performance gave rise.

Here, thought we to ourselves, is another instance of a genius relying too much on the prestige of his own great name; M. Soyer would fain have the dinner-eating public believe in the excellence of his dinners and his wines. A more daring insult to human reason we have not heard of for some time. The only parallel at all near it—which comes to our remembrance—is the pertinacity with which the Inquisition told Galileo he was in error because Ptolemy the astronomer had long ago determined the fact that the earth was stationary. M. Soyer is even more daring than the Inquisitors, for whereas they endeavoured to cheat human intellect by relying on the name of Ptolemy, M. Soyer tries to do the same thing by relying on his own.

The world is less credulous now than of yore, and the mind of modern humanity will not be paralyzed indefinitely by the force of a name, however great. Let M. Soyer beware in time; people will not much longer be constrained into the tacit admission contrary to the evidence of their senses,—that a bad dinner is a good one. Let him beware in time; he owes it to himself—he owes it to posterity.

Numerous as are the schemes of life assurance which the requirements of our artificial social state have called into existence,—various as their peculiarities, their means of expanding the benevolent principle of mutual co-operation for mutual advantage,—it must be confessed that all the early-established companies are scarcely adapted to the wants of those classes which the principles of life insurance most intimately concern—by which the principle would, if compatible with their means, be most largely applied. They are scarcely adapted to the peculiarities of a *fluctuating income*; and, therefore, have a strong tendency to exclude from participation of their advantages the members of all that numerous class whose proceeds are derivable from the efforts of their teeming brains.

All the older insurance companies, and, indeed, the greater number of the new ones, have embodied in their organization the principle of insisting on the punctual forthcoming at stated times of the premium on the policy; a canon sufficiently unobjectionable to the recipient of an unvarying annuity, but totally unadapted to the necessities of all those who have to live by their own exertions. The objectionable peculiarity we have thus indicated is, unfortunately, not a mere matter of theoretical speculation. An investigation of the archives of the old insurance companies demonstrates the painful fact; and proves that the majority of lapsed policies are precisely of a kind which would have

been most desirable to all, save to the office itself, that they should have remained in force.

An examination of these archives, indeed, is scarcely necessary. The enormous profits accumulated by some of the older insurance companies are a sufficient proof that the greatest amount of benefit has not been conferred on the greatest number,—a principle which lies at the foundation of the scheme of life assurance, and which cannot be violated without contravening the very object for which the institution itself was designed. Amongst the various new assurance companies which have sprung into existence, and the prospectuses of which have been submitted to our notice, the National Provincial claims a very favourable expression of our opinion.

Three important features are presented by the published documents of this society. The first goes directly to meet the case of those who, being unable to pay the premium on their policy when due, would at most other offices have been obliged to forego every advantage which by life insurance they had hoped to acquire. Their policy must have lapsed. By the regulations of the office under notice, the holder of a policy three years old, if unable to pay the premium when due, may borrow at his option of the company, at 5 per cent., a sufficient amount to do so, or he may exchange the policy for a smaller one, but equivalent in value to the premiums already paid, and be exonerated from all future contributions.

The second important feature of the company is, that it sets aside 10 per cent. of the paid-up capital for the endowment of schools, to which proprietors of five shares and upwards, and holders of participating policies for £300 and upwards, will be entitled to nominate scholars.

The third feature consists in the formation of a branch exclusively for the industrial classes, whose incomes and means of subsistence offer certain peculiarities which the ordinary chance of life insurance societies is not well adapted to subserve.

Altogether the National Provincial Life Insurance Society is one of the best devised—is specially calculated to meet the wants and necessities of various important communities; and the educational endowment fund, which is a peculiarity of this society, renders it peculiarly eligible to those who, in addition to their other cares, have to provide a suitable education for their families.

REVIEWS.

PHARMACOPEIA OF THE UNITED STATES.*

In the year 1820 our transatlantic brethren published a Pharmacopœia of their own, of which, in 1840, a second edition appeared; and the work now before us, under date 1850, is the third. Avoiding all affectation of classical erudition, and aiming merely at utility, the framers of the second edition of the American Pharmacopœia published the work in the mother language, as Latin, to quote the words of the preface, “did not offer advantages equivalent to the trouble of adapting a dead language to facts and processes for which it had no terms, and to the double cost of the work which it occasioned.”† We think the American pharmacologists have acted wisely in following this course; no true lover of classic literature can ever regard with feelings of satisfaction the application of latinity to the involved description of chemistry and pharmacy—no really good end is secured by the adoption. Even in the hands of the well educated, Latin has been distorted beyond all measure, in unavailing endeavours to adapt it to the description of pharmaceutical and chemical processes; and amongst persons half edu-

* *The Pharmacopœia of the United States of America*. By the Authority of the National Medical Convention, held at Washington, A.D. 1850. Philadelphia: Lippincott, Grambo, and Co., successors to Grigg, Elliot, and Co., 1851.

† It was also published in English; hence the latter remark.

cated, in a classical sense, the barbarities have exceeded all endurance. Whilst commending our American coadjutors for boldly casting aside the trammels of a useless precedent, we are glad that they carry into their pharmacological emendations a sufficient amount of the old British cautiousness to prevent the chance of mistake from the sudden dropping of an old and well-understood Latin term. The Latin names of medicines and preparations have been retained, the editors remark, as they are still generally, and often very conveniently, used in prescriptions; and because it is desirable that medicines should have designations by which they may be recognised in all civilized countries.

A general review of the American Pharmacopœia enables us to substantiate the expression of its editors, that

"the system of nomenclature of the Pharmacopœia of the United States is one of its chief merits. Adopted at a period when it was without example in other works of the kind, and improved with each successive revision, it now prevails to a considerable extent in all the pharmaceutical codes recognised where our vernacular tongue is spoken. Its aim is to be simple, expressive, distinctive, and convenient. In relation to medicines of vegetable origin, it adopts for those which have been long and well known the names by which they have at all times been recognised, and which have withstood, and will no doubt continue to withstand, all the mutations of science. In this category are such titles as *Ammoniacum*, *Camphora*, *Galla*, *Opium*, *Senna*, &c. For medicines of more recent origin, which had received no distinctive official designation, it takes either the generic or specific title of the plant or animal from which the medicine is derived. Thus, we have the generic names *Anthemis* from *Anthemis nobilis*, *Chimaphila* from *Chimaphila umbellata*, *Eupatorium* from *Eupatorium perfoliatum*, *Gillenia* from *Gillenia trifoliata*, *Lobelia* from *Lobelia inflata*, &c.; and the specific names *Senega* from *Polygala Senega*, *Serpentaria* from *Aristolochia Serpentina*, *Taraxacum* from *Leontodon Taraxacum*, &c. A very large proportion of the names have been formed in this way; and, as the generic or specific title of the plant had its origin in many instances in the vernacular name, the original designation is thus fixed and perpetuated. When it happens that two different medicines are obtained from different species of the same genus, it becomes necessary to adopt either for both the whole botanical title of the plants, or for one of them the generic or specific name, and for the other the whole name. Thus, we have *Cassia Fistula* and *Cassia Marilandica*, *Quercus alba* and *Quercus tinctoria*, as titles both for the plants and their medicinal products; and, in the case of the different species of *Gentiana*, the generic name *Gentiana* for the product of *G. lutea*, and the whole name *Gentiana Catesbei* for that of the species so designated in scientific arrangements. When different parts of the same plant are recognised as distinct medicines, they are designated by attaching to the generic or specific title the name of the part employed. Thus are formed the names *Colchici Radix* and *Colchici Semen* from *Colechicum autumnale*, and *Stramonii Folia*, *Stramonii Radix*, and *Stramonii Semen* from *Datura Stramonium*. When these names become established in pharmacy, it does not follow that they are to be changed with the changing scientific titles. On the contrary, it is generally best to retain them, unless by doing so injurious confusion may be occasioned. Thus, we have *Prunus Virginiana* as the name of wild-cherry bark, though the plant from which it is derived is now usually designated by botanists as *Cerasus serotina*. It will be noticed that the Latin names are generally used in the singular number, even though the idea of plurality may be essentially connected with the medicine. Thus, *Cantharis*, *Caryophyllus*, *Ficus*, *Galla*, *Limon*, &c., are used instead of the plural of these terms respectively; and, in reference to the names derived from the part of the plant employed, the same plan is mostly followed, as in the case of *Stramonii Semen*, *Colchici Semen*, &c. In this the example of the Roman medical writers, particularly of Celsus, has been followed. The leaves, however, are expressed in the plural, as *Stramonii Folia*, &c., which is also in accordance with the practice of the same classical author.

"In the use of English names it is not deemed necessary that they should be literal translations of the Latin terms; but that title is preferred which custom and the genius of the language seem to sanction. Thus, the English name corresponding to *Linum* is not *flax*, but *Flaxseed*; and, on the same principle, *Feniculum* is called *Fennel-seed*; *Ulmus*, *Slippery Elm Bark*; *Glycyrrhiza*, *Liquorice Root*, &c. Nor are the English names always in the same number as the Latin. We may correctly say, *Caryophyllus*, *Galla*, *Prunum*, and *Rosa*; but the genius of our language requires that we should translate these terms *Cloves*, *Galls*, *Prunes*, and *Roses*.

"The plan of nomenclature in relation to medicines of mineral origin is to give the proper scientific name, when convenience, or some higher principle, does not call for a deviation from that rule. Hence the names of most mineral medicines are in strict accordance with existing scientific usage. But, in some instances, short and old-established names are preferred to the scientific, especially when these happen to be somewhat unwieldy. Thus, *Alumen*, *Calamina*, and *Creta* have been preferred to the chemical names *Alumina et Potassa Sulphas*, *Zinci Carbonas Impurus*, and *Calcis Carbonas Molliis*. In other instances the chemical designation is more or less unsettled, or the composition of the substance has not been decisively determined. In such cases, either an old name is retained, as *Acidum Muraticum* instead of either *Acidum Hydrochloricum* or *Acidum Chlorohydricum*; or some name is preferred generally expressive of the composition without aiming at chemical accuracy, as *Calc Chlorinata*, taken from the 'London Pharmacopœia,' and *Ferrum Ammoniatum*. In other cases it is considered safest to designate very active medicines, which, if their strict chemical titles were used, might be dangerously confounded by names which, though upon the chemical basis, have some epithet attached expressive of their distinctive character, as *mild chloride of mercury* and *corrosive chloride of mercury*, instead of *protochloride of mercury* and *bichloride of mercury*. Sometimes, for convenience sake, when no risk of confusion can possibly arise, names are adopted sufficiently expressive of the nature of the substance, though not precisely so; as *sulphate of iron* instead of *sulphate of protoxide of iron*, *hydrated oxide of iron* instead of *hydrated sesquioxide of iron*, &c. If any part of the nomenclature of mineral bodies should seem at first sight somewhat incongruous, it will be found to have been adopted in accordance with some one of the principles here stated, or in some other way to have the advantage of convenience or utility. Not a single name has been given or retained without careful consideration.

"When the official names of particular medicines may be supposed not to have yet become universally known, and the old names are still extensively used, the latter are given as synonyms in a subordinate type and position; and those official titles which have been superseded by others adopted at the present revision are inserted beneath, with a reference to the 'Pharmacopœia' of 1840.

"In the 'Materia Medica' the Latin and English official names are first given, and immediately afterwards, in a distinct paragraph, a definition fixing the precise character of the substance referred to; designating, for example, the plant or animal from which it is derived, and the part employed, if it be of vegetable or animal origin; and defining it by the precise chemical name, if mineral. When the official name sufficiently explains itself, as in the case of *Magnesia Sulphas*, *Potassa Nitras*, and *Soda Carbonas*, no definition is given. To most of the mineral substances brief notes are appended, containing, in short and precise terms, an enumeration of those properties by which their identity can be determined, and of the tests by which their freedom from adulterations or accidental impurities may be ascertained. The same plan has been extended to many of the chemicals among the preparations. In relation to most of the medicines of organic origin it has not been thought advisable to offer similar tests of genuineness and purity; as the means of judging are much less precise, and could not be readily expressed in a few brief rules."

From this abstract it will be easily recognised that the editors have well applied the practical genius of their country to embody a large amount of real utility in their classifi-

cation; their main object in every case has been to designate each particular substance by its most commonly received, most generally understood, least popularly ambiguous, name. Under the head of mercurial preparations, when treating of the bichloride and the chloride of mercury, the utility and advantage of this rule of guidance is particularly obvious. Chemically speaking, the terms *corrosive sublimate* and *mild chloride of mercury* are doubtless less precise than the terms *bichloride* and *chloride* of mercury, and are at variance with the regulations affecting the nomenclature of chemistry; but that the former are more generally safe would be sufficiently obvious, even were there not unfortunate instances on record of fatal consequences arising from the mistake of one substance for the other. It cannot be denied that there exists a dangerous similarity between the words *chloride* and *bichloride*; a similarity which might prove treacherous in hundreds of cases where the difference between the words *calomel* and *corrosive sublimate* would have narrowed the chances of employing one for the other to the smallest possible limits. We have often felt that the postulates and conditions of a chemical nomenclature are essentially different from those relating to a nomenclature of pharmaceutical science. In the former case the name of any individual substance should be expressive of the latest theory of the composition of the body to which it refers; in the latter case it should merely determine an identity. It is not impossible that the combining equivalent of chlorine may hereafter be determined as = 72, instead of = 36, or that the present received equivalent for mercury may be halved;—under either of which circumstances that which we term *bichloride* would be forthwith called *chloride*; and the probability of fatal accidents from this change of nomenclature need not be pointed out. The term *calomel*, however, being in no way connected with the chemical constitution of the substance, is no more subject to mutation than are the physical identity, or physiological effects of this body.

As in the London Pharmacopœia, the contents are arranged in the two divisions of *materia medica* and *preparations*, the former enumerating and defining medicines as they are derived from nature or furnished by the manufacturer; the latter containing formulæ, or rules by which they are prepared for use. But the American Pharmacopœia is subdivided in a way that might be adopted with advantage by the Pharmacopœias of our own country—into a primary and a secondary list, the former comprehending medicines of acknowledged value, while the second is devoted to others of less estimation, but still possessing claims to notice. "Many substances," remark the editors,

"at one time much employed, are passing out of use, without having been wholly discarded; while others are brought to the notice of the profession, and are undergoing trial, without having been generally adopted. It is very convenient to have a section into which such doubtful medicines may be thrown, to await the decision of experience for or against them. Without being entirely lost sight of they are thus kept in a subordinate position, which may prevent misapprehension as to their real or estimated value. It is necessary to be understood that the primary list contains not only all substances of recognised efficacy, but others of little or no apparent importance as medicines, which, however, are employed in some one or more of the 'preparations,' and are, therefore, essential. Without this explanation the propriety of introducing such bodies as *Animal Charcoal*, *Bone*, *Cochineal*, *Marble*, and *Red Saunders* into the primary list might be disputed."

Another feature of the American Pharmacopœia consists in the mention of duplicate processes, of which the operator is allowed to take his choice:—

"It is only in cases to which the mode of filtration deno-

minated displacement is adapted that this duplication has been introduced; as in the preparation of some of the vinegars, extracts, infusions, and tinctures. Displacement affords so many advantages, both in an economical point of view, and in the character of the resulting preparations, and has, besides, been practically adopted to such an extent, that it could not, with propriety, be excluded from a Pharmacopœia which claims to be on a level with the improvements of the times. Yet the process requires considerable skill and experience for its proper management, and, if conducted without due regard to the requisite cautions, will necessarily lead to imperfect and unequal results. Thus, if the substance to be acted upon be not in a suitable state of comminution, or be not sufficiently compacted in the instrument, the liquid will be apt to pass through it unequally and in distinct channels, so as not to come into proper contact with all parts of it, and therefore not completely to exhaust its soluble principles; while, on the other hand, if it be too fine and too close, the percolation may be prevented, or so much retarded as to deprive the process of its advantages. Now, to many of those who will adopt the 'Pharmacopœia' as their guide in the preparation of medicines, the method of displacement is probably not yet familiar. If, therefore, it were exclusively adopted in the official processes to which it is applicable, there would be danger that the resulting preparation would, in some instances, be very different from the one contemplated. By leaving to the operator the choice between the former simple methods and the new, this danger is in a great measure avoided; and it is strongly recommended to those who have not made themselves practically familiar with the various sources of error in the method of displacement to postpone its application, whenever an alternative is given in this work, until they shall have acquired the requisite skill."

We have thus taken a general *coup d'œil* at the structure of the American Pharmacopœia, and have stated enough to show that the work has been elaborated after the application of much thoughtful care. In our next number we purpose instituting a comparison between many of the processes therein described, with their representatives in the British Pharmacopœia, a comparison which on the whole will be favourable to the pharmacological reputation of our transatlantic brethren. In the mean time we advise such of our readers as are interested in pharmacy to procure the work and judge for themselves.

SPECIFICATIONS OF CHEMICAL PATENTS

Alfred Vincent Newton, of Chancery-lane, mechanical draughtsman, for improvements in the preparation of materials for the production of a composition or compositions applicable to the manufacture of buttons, knife and razor handles, inkstands, door-knobs, and other articles where hardness, strength, and durability are required. Date of patent, March 4. Date of enrolment, September 4. (Communication.)

This invention relates to the preparation and treatment of caoutchouc and of gutta percha, alone, or combined together, for the purpose of obtaining certain compositions for a new manufacture, to be used as a substitute for horn, ivory, jet, &c., as also in the place of various costly woods, as veneers for furniture, &c.

In treating caoutchouc the patentee combines it with sulphur, the proportions of half caoutchouc and half sulphur being those preferred.

Articles formed of this composition, and submitted to what the patentee terms the "curing" process, possess great hardness and durability.

The patentee finds that by the addition of some other substances to the composition above named its qualities are much improved; these substances are magnesia, lime, carbonate of lime, sulphate of magnesia, sulphate of lime, calcined French chalk, or other magnesian compounds, and he recommends the adoption of the following proportions:—

Caoutchouc, one pound; sulphur, half a pound; magnesia, half a pound. Instead of the magnesia, lime may be used, or the carbonate and sulphate of magnesia, or the carbonate and sulphate of lime, French chalk, &c. Gum-lac or gum shellac may also be advantageously combined with the above, in the proportion of from four to eight ounces of gum-lac or shellac to each one pound of caoutchouc employed in the composition. Resin, the oxides of lead and zinc, and various other mineral and vegetable substances, may be added to the composition for the purpose of communicating colour, polish, or the property of making more easily; the proportions of any of these ingredients being left to the judgment of the operator. The articles formed of this composition are not submitted to the heating or curing process, but, as this process is also applicable to other compositions, the patentee proceeds to describe them first.

When gutta percha is employed in place of caoutchouc the patentee recommends the adoption of the following formula: Gutta percha, one pound; sulphur, six ounces; and from six to eight ounces of either magnesia, lime, carbonate of lime or magnesia, sulphate of lime or magnesia, calcined French chalk, or other magnesian compound; or, instead of the proportions of magnesia, lime, or their respective combinations above named, the patentee uses the same proportion of any two or more of these substances combined, in which case the quantity of the third ingredient in the composition must not exceed the proportion given of from six to eight ounces to each pound of gutta percha employed.

The addition of about four ounces of gum shellac to a quantity of the composition containing one pound of gutta percha also effects a great improvement; the composition thus obtained being stronger, and capable of being worked with greater facility. The same addition of resin, metallic oxides, mineral and vegetable colouring substances, may be made to this composition, as in the case of the one before mentioned, having caoutchouc for its base.

The compositions above described, whether containing caoutchouc or gutta percha, are made by means of a masticating-machine, or any other machine of a similar kind, used in the preparation of caoutchouc, by which a due admixture of the ingredients can be effected. The mineral substance employed should previously be reduced to the state of an impalpable powder. The composition may be rolled into sheets, or moulded into the required forms in the usual manner.

The next operation is that of "curing" the rolled sheets or moulded objects formed of either of these compositions. To effect this the articles are exposed to a high degree of artificial heat, obtained either by the use of steam, hot water, or heated air. The degree of heat and length of time for their exposure to the curing process must be regulated by the dimensions and thickness of the articles. Ordinarily, an exposure for four hours to a temperature of 260° to 270° Fahr. will be found sufficient, but, as a general rule, the patentee states a temperature of from 250° to 300° Fahr., and an exposure of from two to six hours. The result of the curing process is, that the articles submitted to it become hard and stiff, resembling horn, bone, tortoiseshell, ivory, &c. In the manufacture of the compositions above named, containing caoutchouc, gutta percha in suitable proportion may be added; and to the compositions containing gutta percha, caoutchouc may be added.

Under this head of his invention the patentee claims the treating of caoutchouc and of gutta percha, and of caoutchouc and gutta percha combined, as above described, for the purpose of producing a compound or compounds, applicable to the various uses mentioned in the title of the patent.

The second part of the patentee's invention relates to certain methods of applying the composition thus formed to the manufacture of various articles. In many cases all that is required is to operate on the composition as in the case of wood, bone, ivory, &c., and to turn it or otherwise as desired; but in some cases it becomes necessary to mould, shape, or otherwise treat the composition, so as to render it the better suited for the purpose for which it is intended, prior to its being submitted to the heating or curing process. For instance, in forming a combination with this composition and

common flexible vulcanized caoutchouc, as in the manufacture of artificial jet bracelets, the parts intended to be hardened may be united to a circular band or otherwise of flexible vulcanized caoutchouc, by pressing together the surfaces required to be joined, before the heating or curing process has been effected, by which means, during the process of curing, the projecting elastic and non-elastic surfaces will be made to adhere together.

Another plan consists in treating the composition in such a way, when in a plastic state, that whilst it becomes hardened it shall retain its original shape. This is effected by the use of sand, powdered soapstone, or some other siliceous substance. The objects formed of the composition are imbedded in boxes containing sand, soapstone, or other suitable substance of a similar nature, which, when packed, are placed in the oven and heated; the articles thus acquire hardness, and at the same time retain their original form. Should the surface of any object so treated be required to be smooth, it must be covered with soapstone, if imbedded in sand. Articles of furniture, book-covers, buttons, toys, door-knobs, knife-handles, &c., may thus be manufactured.

Another method of applying the compositions consists in uniting them in their plastic state with iron or some metallic or other suitable substance, capable of sustaining exposure to a high degree of artificial heat without undergoing alteration or becoming injured. For this purpose a thin sheet of either of the compositions may be carefully placed on the roughened surface of a plate of iron, or other metal, or any suitable material, and care have having been taken to expel all the air between the composition and the metal, and the composition being firmly attached by means of bands or ribbons, the whole is then submitted to the previously-described process of heating or curing. Strength and support are thus given to the composition the surface of which is hard and durable. This part of the process is applicable to the manufacture of various articles in the harness and carriage trade.

If it be desired to use wood in the place of iron, care must be taken that the wood employed has been previously prepared by steaming, in order to prevent the liability of its becoming warped or otherwise damaged by the heat to which it is subjected in the curing process.

Under this head of his invention the patentee claims the competition of the manufacture of the composition or compositions, having the qualities above mentioned, after the application of the same to any one or more of the purposes described in the title of the patent.

William Milner, of Liverpool, in the county of Lancaster, safety-box manufacturer, for certain improvements in boxes, safes, or other depositories for the protection of paper or other materials from fire. Date of patent, February 28. Date of enrolment, August 28. The only part of the specification of this patentee which claims notice at our hands is as follows.—A cement is formed of pulverized quartz, or other infusible substance, in combination with hardwood dust; and the space between the inner and outer casing of the safety-boxes is filled with the cement thus formed.

The patentee claims the application of this composition to the purposes mentioned in the title of his patent. The remainder of the specification relates to locks, bolts, and other mechanical contrivances for ensuring the safety of these boxes, &c.

ON ELECTRO-METALLURGICAL PATENTS.

The Statute of Monopolies (21 J., 1., c. 3) declares the conferring on any person the exclusive privilege of carrying on a particular trade, or manufacture, to be altogether contrary to the laws of this realm, and a species of offence, called monopoly. The statute, however, excepts letters patent for the term of fourteen years and under, for the working or making of any manner of new manufactures within this realm, which others at the time of making such letters patent shall not use.

A new manufacture may be the production of a new article for the first time, or a new mode of producing the same article either by an addition or omission of any part of

the process, or, with regard to chemical patents, of some new specific process. A new manufacture may also consist of a new application and adaptation of some known agent or thing.

It is essential that any of the above manufactures or processes should be a new invention "as to the public use and exercise thereof;" in other words, no patent is valid that is taken out for an invention in public use, although the practice in secret of any process, by a manufacturer, will not prevent another manufacturer from taking out a patent for the same process and forbidding the first. The prior publication of a process in a printed book in this country, under certain circumstances, will vitiate a patent, though a process well known and freely practised abroad may be patented in this country. The new manufacture, in any case, must be useful to entitle it to a patent; therefore the slightest novelty attended with great good will justify a patent.

For the inventor to secure to himself the exclusive right of a new manufacture it is essential that he should disclose his process in such a way that persons may use the same at the expiration of his patent; and the spirit of the English law seems to suppress monopoly, but to allow advantages for a limited period to those who benefit their country by adding or introducing any new and useful manufactures.

The principle which guided our forefathers upon patents deserves the highest commendation, though the practice of their successors upon this subject cannot well be worse; for, as now constituted, letters patent cause great expense to inventors who really deserve them, great injury and trouble to manufacturers from their being frequently granted where not deserved, and endless expense and litigation from their insecurity when obtained. If the principle of patents according to the English constitution were strictly adhered to in practice, nothing could more tend to improve and enlarge our manufactures.

By reducing the expense of the patent, affording greater facility for procuring it when deserved, preventing the possibility of its being granted improperly, and rendering it, when obtained, an absolute protection, the inventors would be directly benefited, the manufacturers protected, and the prosperity of the whole country would be enhanced by the monopoly, in the manner that the wisdom of our forefathers contemplated.

From the preceding observations the electro-metallurgist will perceive that it is not only essential that a patentee should have a patent to secure the monopoly of any manufacture, but that he should have acquired it properly. For this reason it is by no means certain that the following patents are rightfully possessed, and therefore it would be wise in a person interested in any process to examine carefully how far any patent interfering with his business is valid. The following list I have principally compiled from the "Repertory of Patent Inventions" and "Newton's London Journal,"—particularly valuable sources of reference for these matters; and in these journals tolerably full extracts of a great number of electro-metallurgical patents have been given.

There is a curious point of law connected with some of these patents, and that is, particular processes have come into public use between the granting of a patent and its specification; and which processes could not even be inferred in the slightest degree from the title of the patent. In these cases, common sense, doubtless, says that the patent ought not to prohibit the manufacture in common use; but what the law says lawyers alone can decide. Persons requiring information on this subject may consult a chapter dedicated to these matters in "Stephen's Commentaries on the Laws of England," book ii., part ii., chap. 3, or a very interesting little treatise by Webster, "On the Subject-matter of Letters Patent by Invention," the author being a great authority on these points.

If a true and valid patent is infringed, the inventor has his remedy by an action of trespass for injury sustained, and he may also obtain an injunction to restrain the continuation of the manufacture, and can compel the aggressor to deliver an account of the profit he has derived from the sale of the

article. Moreover, any person using the name or mark of the patentee is subject to a penalty of £50. The action may be resisted by showing that the patent is void in the manner already pointed out, or the patent may be formally impeached (if improperly obtained) in the Queen's name by the Attorney-General, or even by any other person with his consent.

The first strictly electro-metallurgical patent was granted to James Shore, of Birmingham, merchant, for improvements in preserving and covering certain metals and alloys of metals. Sealed March 3, 1840. Enrolled in the Enrolment-office, Sept., 1840. The patentee claims the coating of manufactured articles of wrought or cast iron, lead, and copper, and its alloys, with copper or nickel; such coating being effected by galvanic electricity.

The next patent was granted to George R. Elkington and Henry Elkington, of Birmingham, for improvements in coating, covering, or plating certain metals. Sealed March 25, 1840. Enrolled in the Enrolment-office, Sept., 1840. The patent is for numerous processes of gilding, plating, &c. &c.

The next patent was granted to Thomas Spencer, of Liverpool, carver and gilder, and John Wilson, of the same place, lecturer on chemistry, for certain improvements in the process of engraving on metals by means of voltaic electricity. Sealed Oct. 7, 1840. Enrolled in the Petty Bag-office, April, 1841.

A patent was granted to Joseph Lockett, of Manchester, in the county of Lancaster, for certain improvements in manufacturing, preparing, and engraving cylinders, rollers, and other surfaces for printing and embossing calicoes or other fabrics. Sealed August 27, 1840. Enrolled in the Petty Bag-office, February, 1841. This appears to be an important patent connected with the cotton-printing manufactures.

A patent was granted to William Tudor Mabley, of Wellington-street North, in the parish of St. Paul, Covent-garden, in the county of Middlesex, mechanical draughtsman, for certain improvements in producing surfaces to be used for printing, embossing, or impressing. Sealed Dec. 17, 1840. Enrolled in the Rolls' Chapel-office, 1841. This patent seems to contain numerous applications of electro-metallurgy to printing surfaces, but to what perfection he carries out his processes I am unable to state.

A patent was granted to Alexander Jones, engineer, for improvements in the manufacture of copper tanks and vessels. Sealed June 14, 1841. Enrolled in the Enrolment-office, May, 1841.

To George R. Elkington and H. Elkington, of Birmingham, for improvements in coating, covering, or plating certain metals. Sealed June 22, 1841.

To Edward Palmer, of Newgate-street, gentleman, for improvements in producing printing surfaces, and in the printing of china, pottery, vases, music, and maps. Sealed June 12, 1841. This patent is briefly noticed under the head electro-tint in the text, and a little work dedicated to this subject has been written by Sampson.

Specification of the patent granted to Islam Baggs, of Cheltenham, gentleman, for improvements in printing. Sealed Jan. 23, 1841. Enrolled 23rd, 1841. This is a very ingenious patent, whereby colours are given by means of the galvanic battery.

To Ogilthorpe Barratt, of Birmingham, metal-gilder, for certain improvements in the precipitation or deposition of metals. Sealed Sept. 8, 1841.

To Alexander Parkes, of Birmingham, for certain improvements in the production of works of art in metal by electric deposition, March 29, 1841.

To Edward Palmer, of Newgate-street, philosophical instrument maker, for improvements in producing printing and embossing surfaces. Sealed Jan. 15, 1842. This important patent has been described under "Glyphography" in the text, and an illustration is given.

To Louis Hypolite Piaget and Philip Henry du Bois, of Wynnyatt-street, Clerkenwell, Middlesex, November 12, 1846.

To Cyprien Maire Tessie du Motay, of Paris, for improvements in inlaying and coating metals with various substances, November 4, 1847.—*See Electro-Metallurgy.*

PRICE CURRENT OF DRUGS, &c.

Articles having bd. or bond annexed are sold at short price exclusive of duty; when no duty is affixed the article is free. Add 5 per cent. to the duty on all articles excepting those having an asterisk prefixed. F. means foreign; B.P. British possessions.

DRUGS, &c.	Price.	
ALKANET ROOTcwt.	£. s. d. 1 14 6 @ 2 10 0	
ALORS, Barbadoes	1 10 0 @ 6 0 0	
Hepatica	1 10 0 @ 5 0 0	
Cape	1 5 0 @ 1 15 0	
ALUM, Britishton	7 10 0 @ 8 5 0	
Bochcwt.	1 0 0 @ 1 4 0	
AMBERGRIS, Greyoz	4 8 @ 8 0	
ANCHOVIESdble. bri.	17 0 @ 18 0	F. 2d. per lb.
ANGELICA ROOTcwt.	1 0 0 @ 1 5 0	
ANNATTO, Flaglb.	1 0 @ 1 2	
Roll	0 10 @ 1 0	
ANTIMONY, Crudecwt.	1 8 0 @ 0 0	
Oreton.	12 0 0 @ 0 0	
Regulus Cps.cwt.	2 4 0 @ 3 0 0	
Bowls	2 15 0 @ 2 13 0	
ARROW ROOTlb.	0 3 @ 1 0	B. P. 6d. F. 2s.
ARSENIC, Whitecwt.	17 0 @ 18 0	
Red	0 0 @ 0 0	
English White	12 6 @ 1 0	
Yellow	19 0 @ 1 0 0	
ARGOL, Bolognacwt.	2 0 0 @ 2 12 0	
Florence White	2 0 0 @ 2 8 0	
Red	2 0 0 @ 2 5 0	
Naples White	1 18 0 @ 2 5 0	
Red	1 12 0 @ 1 13 0	
Sicily White	1 8 0 @ 1 16 0	
Red	1 8 0 @ 1 10 0	
French	1 14 0 @ 2 7 0	
Cape	1 15 0 @ 2 11 0	
ASPHALTUM, Egyptian	2 10 0 @ 4 15 0	
BORACIC ACIDcwt.	2 12 0 @ 2 13 0	
BALSAM, Canadalb.	0 9 @ 1 0	
Capivi	0 10 @ 1 2	
Peru	5 6 @ 6 0	
Tolu	3 6 @ 4 0	
BARILLA, Spanishton	0 0 @ 0 0	
Tenariffe	0 0 @ 0 0	
Sicily	0 0 @ 0 0	
East India	0 0 @ 0 0	
BARK, Peruvian, Palelb.	1 6 @ 2 6	
Good	0 0 @ 2 0	
Mid., do.	1 1 @ 1 2	
Crown	1 3 @ 2 2	
Yellow, Flat	3 0 @ 4 6	
Quill	2 0 @ 6 5	
Red, Flat	7 0 @ 0 0	
Quill	3 0 @ 4 6	
Cascarillacwt.	1 0 0 @ 1 15 0	
Quercitron	8 5 @ 9 6	
Oak, English....per load	13 0 0 @ 14 0 0	
Foreign....per ton.	3 0 0 @ 6 5 0	
New S. W.	6 0 0 @ 8 0 0	
BEERIES, Baycwt.	19 6 @ 1 6 0	
Juniper, Italian.. ..	7 6 @ 8 0	
German.. ..	8 0 @ 12 0	
Turkey, Yellow.. ..	3 15 0 @ 6 0 0	
Perian, do.	8 0 0 @ 14 0 0	
BLACK LEAD, E. I.cwt.	5 0 @ 16 0	
Malaga	10 0 @ 1 5 0	
German	1 0 0 @ 1 3 0	
Dust	9 0 @ 12 0	
BORAX OR TINCALcwt.	2 0 0 @ 0 0	
E. I. Refined	2 17 0 @ 2 18 0	
English Refined	3 10 0 @ 3 12 0	
BRIMSTONE, Rough.. ..ton	8 10 0 @ 9 5 0	
Roll	12 0 0 @ 0 0	
CAMPHOR, Unrefinedcwt.	3 7 6 @ 3 10 0	
Dutch.. ..	3 10 0 @ 0 0	
Refinedlb	1 0 @ 1 1	5s. per cwt.
CANTHARIDES, bd.	3 0 @ 3 6	3d. per lb.
CAPERS, Frenchcwt.	7 0 0 @ 12 0 0	3d. " B.P.
Capotis	6 0 0 @ 7 10 0	
CARDAMOMS, Malabarlb	2 6 @ 3 0	
Long Longs.. ..	3 0 @ 3 4	
Ceylon	1 3 @ 1 5 1/2	
CASTOR OIL, Americalb	0 0 @ 0 0	
E. I., bd.	0 2 1/2 @ 0 5	
CHILIES, E. I.cwt.	15 6 @ 1 5 0	6d. per lb.
CHINA ROOTcwt.	10 0 @ 1 0 6	
COCHINEAL, Honduras Blacklb	3 7 @ 4 10	
Silver	2 10 @ 3 9	
Mexican Black	3 2 @ 3 9	
Silver	2 11 @ 3 4	
COBALTlb.	0 0 @ 0 0	
COCULUS INDIUScwt.	1 0 0 @ 1 7 0	

DRUGS, &c., continued.

DRUGS, &c., continued.	Price.	
COFFEE, Jamaica, triage and ord.	£. s. d. 1 13 0 @ 1 18 0	B.P. 4d. F. 6d. per lb.
good and fine ord.	2 0 0 @ 2 6 0	
low to good middling	2 8 0 @ 3 10 0	
fine middling & fine	3 12 0 @ 4 10 0	
Demerara, triage & ord.	0 0 @ 0 0	
good and fine ord.	0 0 @ 0 0	
low to good mid.	0 0 @ 0 0	
Berbice, triage and ord.	0 0 @ 0 0	
good and fine ord.	0 0 @ 0 0	
low to fine middling	0 0 @ 0 0	
Dominica and St. Lucia, triage and ordinary	0 0 @ 0 0	
good and fine ord.	0 0 @ 0 0	
low to good middling	0 0 @ 0 0	
Ceylon, ordinary to very good ord. native	1 18 0 @ 2 0 0	
fine ord. to mid. plu.	2 4 0 @ 2 14 0	
good mid. to fine do.	2 16 0 @ 3 15 0	
Mocha, ord. & ungarnbled clean garbled	2 0 0 @ 2 10 0	
fine	3 8 0 @ 3 15 0	
Sumatra, Padang, &c. Java	3 16 0 @ 4 8 0	
Mysore with certificate	1 17 0 @ 2 0 0	
Brazil, ord. to fine ord.	1 19 0 @ 2 10 0	
ex. fine plant. kind	1 15 0 @ 1 18 0	
St. Domingo	2 0 0 @ 2 15 0	
Havannah, ord. to g. ord.	1 17 0 @ 1 19 0	
fine ordin. to mid.	1 18 0 @ 2 0 0	
Cuba, ord. to good ord.	2 2 0 @ 2 10 0	
fine ord. to middling	1 18 0 @ 2 2 0	
Porto Rico	2 4 0 @ 2 15 0	
La Guayra	1 18 0 @ 2 10 0	
Costa Rica	1 18 0 @ 2 12 0	
COCOA, Trinidad, red	2 0 0 @ 2 12 0	
grey	2 3 0 @ 2 14 0	B.P. 1d. F. 2 1/2 per lb.
Grenada	1 18 0 @ 2 2 0	
Para, St. Domingo, and Bahia	1 15 0 @ 2 3 0	
Guayaquil	1 7 0 @ 1 9 0	
COLOCINTH, Turkeylb.	1 10 6 @ 1 11 0	
Spanish	0 8 @ 1 2	
COLOMBO ROOT	0 11 @ 1 6	
COFFEAS, Green, bc.ton	2 16 0 @ 2 19 0	
Blue	1 10 0 @ 2 15 0	
CREAM TARTAR, French	8 0 @ 1 10 0	
Venetian	2 18 0 @ 3 8 0	
CUBEScwt.	3 5 0 @ 3 8 0	
CUTCH	4 0 0 @ 5 0 0	
DRAGON'S BLOODlump	1 0 0 @ 1 0 6	
Reed	3 10 0 @ 9 15 0	
DYEWOODS: Brazilton	8 0 0 @ 14 10 0	
Barwood, Angola	45 0 0 @ 80 0 0	
Camwood	0 0 @ 0 0	
Fustic, Brazil	13 15 0 @ 28 15 0	
Cuba	0 0 @ 0 0	
Jamaica	0 0 @ 0 0	
Spanish	8 10 0 @ 9 0 0	
Zante	5 0 0 @ 5 10 0	
Logwood, Campeachy	4 0 0 @ 4 10 0	
Honduras	0 0 @ 0 0	
Jamaica	6 10 0 @ 6 15 0	
St. Domingo	5 0 0 @ 5 10 0	
Nicaragua, Lima	3 10 0 @ 4 0 0	
solid	4 0 0 @ 5 0 0	
small and mid.	14 0 0 @ 15 0 0	
Red Sanderston	12 0 0 @ 17 0 0	
ESSENTIAL OILS: Cloves, bd.lb.	6 10 0 @ 12 0 0	
Caraway	4 15 0 @ 5 15 0	s. per lb.
Lavender	6 3 @ 5 4	
Peppermint, bd.	3 6 @ 7 0	
Spike	4 0 @ 11 0	
Aniseed, bd.lb.	4 0 @ 0 0	
Cassia, bd.	5 5 @ 5 6	
Cayaput, bd.oz.	9 6 @ 10 0	
Cinnamon, bd	0 3 1/2 @ 0 4 1/2	
Mace (expd.), bd.	0 10 @ 2 6	
Nutmegs, bd.	0 3 @ 0 5 1/2	1s. per lb.
Bergamotlb	0 4 @ 0 5	
Lemon	9 0 @ 9 9	
Orange	8 6 @ 8 9	
Rosemary	6 9 @ 7 0	
Thyme	1 8 @ 2 6	
Otto Rosesoz.	9 9 @ 3 0	
Almondslb	13 6 @ 1 0 0	
GALANGAL ROOT, bd.cwt.	1 5 0 @ 0 0	
GALLS, sortscwt.	14 0 @ 1 4 0	
Green or White	4 0 0 @ 4 10 0	
Blue	2 15 0 @ 3 10 0	
E. I. Bluebd.	4 12 0 @ 5 0 0	
GENTIAN ROOTcwt.	3 10 0 @ 8 0 0	
GLUE, Best Towncwt.	1 1 0 @ 1 2 0	
Interior	1 5 0 @ 1 0 0	
Foreign	0 0 @ 0 0	
GUINEA GRAINS, bd.	1 10 0 @ 2 5 0	5s. per cwt.

DRUGS, &c., continued.

	Price.		Price.
	£. s. d.	£. s. d.	£. s. d.
GUTTA SERENA lb.	0 10 @	1 0	
GUMS:			
Ammoniac, Lp. cwt.	9 6 @	1 10 0	
Drop	1 15 @	3 15 0	
Arabic, E. I.	1 0 @	4 12 0	
Cape	12 0 @	1 2 0	
Turkey, fine	8 10 @	10 0 0	
Sods and Sods	3 5 @	6 0 0	
Australian	1 17 @	2 0 0	
Barbary, Brown	1 15 @	3 10 0	
White	3 5 @	3 15 0	
Gedda	5 0 @	6 0 0	
ANIMI, washed	3 0 @	11 10 0	
scraped	6 0 @	12 0 0	
Copal lb.	0 6 @	2 8	
ASAFETIDA cwt.	10 0 @	4 10 0	
BENJAMIN, Sods	4 0 @	9 10 0	
1st and Sods	10 0 @	35 0 0	
DAMMAR	1 10 @	1 18 0	
GAMBOGE	5 0 @	11 12 6	
GALBANUM	2 10 @	3 0 0	
GUAIACUM lb.	0 6 @	1 0	
MYRRH, E. I. cwt.	2 0 @	10 0 0	
MASTIC lb.	3 0 @	6 6	
OLIBANUM cwt.	10 0 @	2 14 6	
SANDRACH	3 6 @	3 10 0	
SENEGAL, garbled	3 0 @	4 10 0	
TRAGACANTH, Picked	13 0 @	16 0 0	
Sorts	4 6 @	10 0 0	
LAC, Sticklac, Bengal	17 0 @	1 15 0	
Siam, &c.	2 10 @	3 8 0	
Shellac, Liver cwt.	2 2 @	2 5 0	
Ruby	2 5 @	2 10 0	
Orange	2 5 @	2 18 0	
Block	1 1 @	2 5 0	
Blood	2 0 @	2 8 0	
Seedlac cwt.	1 0 @	2 0 0	
HELLBORE ROOT cwt.	1 18 @	0 0 0	
HONEY, Fine	1 8 @	3 0 0	
ISLAND MOSS lb.	0 2 @	0 2	
INDIA RUBBER, solid	0 8 @	0 8	
bottles	1 6 @	1 9	
small	1 9 @	2 6	
INDIGO florae .. lb.	4 2 @	4 7	
Bengal, fine blue	6 0 @	6 4	
good and fine violet and purple	5 6 @	5 9	
ordinary and middling	4 7 @	5 0	
good and fine copper	5 4 @	5 8	
ordinary and middling	3 9 @	5 0	
Consumers, good and fine	4 8 @	5 2	
ordinary and middling	3 9 @	4 6	
Java, good and fine	4 2 @	6 8	
Onde, good and fine	3 3 @	4 6	
ordinary and middling	2 2 @	3 2	
Madras, good and fine	3 1 @	4 3	
ordinary and middling	1 9 @	3 0	
Kurpah, good and fine	3 6 @	5 6	
ordinary and middling	2 0 @	3 5	
Manilla good and fine	Withdrawn.		
ordinary and middling			
IPERACUANHA lb.	5 0 @	5 6	
ISINGLASS LEAF, 1st sort	10 0 @	13 6	
2nd sort	9 0 @	10 0	
Simovia	2 0 @	2 9	
Siberia Purse	5 0 @	6 0	
Short Staple, 1st	8 0 @	14 0	
Long ditto	10 0 @	14 0	
ISINGLASS, Brazil	0 6 @	5 6	
JALAP lb.	1 4 @	2 2	
JUICE OF LEMON gal.	0 10 @	1 0	
LAC DYE, Fine lb.	1 8 @	2 4	
Good	1 2 @	1 5	
Middling	1 0 @	1 2	
Ordinary	0 5 @	0 11	
Lake	0 3 @	0 8	
LIQUORICE Paste, Ital. cwt.	3 5 @	3 12 6	
Block	4 0 @	5 15 0	
MADDEBS, Dutch Crop cwt.	2 6 @	2 10 0	
Ombro	2 2 @	2 5 0	
Gamene	1 5 @	1 10 0	
Mull	8 0 @	12 6	
French	0 0 @	0 0	
Spanish	1 10 @	2 0 0	
MADDER ROOTS, Turkey	1 6 @	1 10 0	
MAGNESIA, English	2 0 @	2 2 0	
MANNA, Flakey lb.	3 0 @	3 6	
Sicily	1 0 @	1 6	
MUNJEET, E. I. cwt.	18 0 @	1 2 0	
METALS:			
IRON Brt. Cakes ton	81 0 @	0 0	
Tile	83 0 @	0 0	
Sheets lb.	0 9 @	0 0	
Bottoms	0 10 @	0 0	
Old	0 24 @	0 0	
S. American ton	88 0 @	0 0	
Foreign Cake	0 0 @	0 0	
Foreign Tile	0 0 @	0 0	

B.P. 5 F. 10s.

Public Sale Prices.

F 1 0 0 cwt.
BP 10 0 cwt.per cwt. un-
wrought 4s.
B.P. 8s. 9d. F.
wrought B.P.
6s. F. 10s. old
B.P. 3s. 6d.
old F. 7s. 6d.

DRUGS, &c., continued.

	Price.		Price.
	£. s. d.	£. s. d.	£. s. d.
IRON, British Bars	5 2 6 @	5 10 0	
Rods	6 5 0 @	6 15 0	
Hoops	7 6 0 @	7 10 0	
Sheet	7 15 0 @	8 5 0	
Cargo in Wales Bars	4 10 0 @	0 0	
Figs No. 1 Wales	3 0 0 @	4 0 0	
No. 1 Clyde	1 19 0 @	3 0 0	
Russian C.G.N.D.	0 0 @	0 0	
P.S.I.	0 0 @	0 0	
Archangel	0 0 @	0 0	
Swedish	11 10 0 @	13 10 0	
LEAD, British:			
Pigs ton	16 15 0 @	0 0	
Sheet milled	18 0 0 @	18 5 0	
Shot Pat.	19 10 0 @	20 10 0	
Red or Minium	18 10 0 @	19 0 0	
White	23 0 0 @	25 0 0	
Litharge	19 0 0 @	0 0	
Pig Spanish	0 0 @	0 0	
American	0 0 @	0 0	
STEEL, English	0 0 @	0 0	
Swedish Keg	14 10 0 @	0 0	
Faggot	15 10 0 @	0 0	
TIN, Blocks	4 4 0 @	0 0	
Ingots	4 10 0 @	0 0	
In Bars	4 5 0 @	0 0	
Banca .. bd. ..	4 0 0 @	0 0	
Straits .. bd. ..	4 0 0 @	0 0	
Peruvian .. bd. ..	0 0 @	0 0	
Plates, p. bx. of 225 Sheets:			
No. 1 C 13 by 10 in. ..	1 5 0 @	1 5 6	
1 X	1 13 0 @	1 13 6	
1 XX	0 0 @	0 0	
SPELTER on the spot ton	14 5 0 @	0 0	
Delivery	14 5 0 @	0 0	
ZINC, English Sheet	21 0 0 @	0 0	
PLATINA ORR	0 0 @	0 0	
ORSEW	0 0 @	0 0	
MUSK, good and fine lb.	10 0 @	1 5 0	
NUX VOMICA, bd. cwt.	7 6 @	9 6	
OILS—Imperial measure:			
Olive, Florence, 4 chest ..	15 0 @	18 0	
Lucca, jars	5 0 0 @	0 0	
Gallipoli, 250 gla. ..	40 0 0 @	41 10 0	
Spanish, ditto	28 0 0 @	29 10 0	
Linseed .. cwt.	1 12 6 @	0 0	
Rape, Pale	1 12 6 @	1 15 6	
Brown	1 12 0 @	1 13 0	
Cod tun.	36 10 0 @	0 0	
Seal, Pale	34 10 0 @	0 0	
Brown, yel., and straw ..	31 0 0 @	34 0 0	
Sperm	84 0 0 @	85 0 0	
Head Matter	90 0 0 @	96 0 0	
Whale, Greenland	0 0 @	0 0	
South Sea	31 0 0 @	33 0 0	
Cocos Nut cwt.	1 10 0 @	1 14 6	
Palm cwt.	27 10 0 @	28 0 0	
OLIVES, French 4 bars .. 2 gals	3 0 0 @	4 0 0	
Spanish, keg 2 galls. ..	9 0 @	10 0	
OPIMUM, Turkey, bd lb.	10 6 @	14 0	
Egyptian	7 6 @	8 6	
ORCHELLA, Angola ton	25 0 0 @	25 0 0	
Cape de Verd	25 0 0 @	25 0 0	
Madeira	30 0 0 @	0 0	
ORPIMENT, E. India	0 0 @	0 0	
ORANGE FLOWER water .. lb.	0 8 @	0 0	
Peel	5 0 @	0 0	
ORRIS ROOT cwt.	1 18 0 @	2 2 0	
PELLITORY ROOT lb.	0 6 @	0 0	
PINK ROOT lb.	0 5 @	0 8	
PITCH, British cwt.	5 6 @	0 0	
Archangel	7 6 @	0 0	
Stockholm	12 0 @	0 0	
Burgundy cwt.	0 0 @	0 0	
PUMICSTONE, sorts ton	5 0 0 @	8 0 0	
QUASSIA cwt.	8 0 @	12 0	
QUICKSILVER lb.	3 4 @	3 6	
RHATANIA ROOT lb.	0 5 @	0 8	
RHUBARB, round	0 6 @	3 3	
Flat	0 8 @	3 3	
Dutch, trimd.	2 6 @	3 3	
Russian	10 0 @	12 0	
SACCHARUM SATURNI, bd. .. lb.	0 0 @	0 0	
SAFFRON, Spanish lb.	1 0 0 @	1 6 0	
*SAGO common cwt.	18 0 @	18 6	
Pearl	19 0 @	1 4 0	
Sago Flour	14 0 @	15 0	
SAL AMMONIAC, E. I. cwt.	1 10 0 @	1 13 0	
English, Refined	1 18 0 @	0 0	
SALTS, Glauber	6 6 @	7 6	
Epsom	6 0 @	6 6	
SALF	18 15 0 @	14 5 0	
SARSAPARILLA, Brazil .. lb.	0 10 @	1 2	
Honduras	0 20 @	1 6	

6 0
0 0B.

10 per cwt.

5 0 p. cwt.

2 0 2 0 gall.
1 0 1 0 p. lb.

DRUGS, &c., continued.		Price.		
		£. s. d.	£. s. d.	
SARSAPARILLA, Vera Cruz	..	0 4 0	2 3	
SARSAPARILLA, Jamaica	..	1 6 0	2 3	
SASSAPARILLA ROOT	..	10 0 0	19 0 0	
SAFFLOWER, E. I.	..cwt.	2 10 0	7 10 0	
SAFFLOWER, Bombay	..	1 0 0	2 0 0	
SHUMAC, Malaga	..cwt.	12 0 0	13 6	
Sicily	..	14 6 0	15 0	
Trieste	..	4 6 0	6 6	
SALTPETER, Rough	..	1 5 0	1 9 0	
British, Refined	..	1 9 0	1 9 6	
Nitrate of Soda	..	14 9 0	15 0	
British, Refined	..	5 0 0	7 0	
SCAMMONY, Smyrna	..lb.	10 0 0	15 0	
Aleppo, Soda	..	1 8 0	1 15 0	
fine	..	2 2 0	2 5 0	
SEEDS, Aniseed	..cwt.	2 2 0	2 5 6	
German	..	2 5 0	3 10 0	
E. I. Star	..	2 15 0	3 10 0	
Cumin	..	19 0 0	1 10 0	
Caraway, Foreign	..	0 6 0	1 0	
SANUKA ROOT	..lb.	0 2 0	0 6	
SENNA, Alexandria	..lb.	0 0 0	0 0	
Smyrna	..	0 1 0	0 5	
East India	..	0 8 0	1 4	
Tinnevely	..	1 2 0	0 0	
SMALT, Saxon, FFFE	..lb.	1 7 0	0 0	
Danish, FFFE	..	1 3 0	0 0	
FFFFE	..	1 3 0	0 0	
SHAKE ROOT	..lb.	0 4 0	0 8	
SOAP, Naples, soft	..cwt.	2 0 0	0 0	
Castile, hard	..	2 2 0	2 4 0	
British, Medford	..	1 18 0	2 2 0	
Yellow	..	2 14 0	0 0	
White	..	0 0 0	0 0	
Scented	..	0 0 0	0 0	
Windsor	..	0 0 0	0 0	
Oil	..	1 0 0	0 0	
Soft B. B.	..	0 0 0	0 0	
B. S.	..	0 0 0	0 0	
B.	..	6 10 0	0 0	
Soda	..ton.	1 10 0	1 11 0	
ASHES, Canada Pot lat. cwt.	..	1 0 0	0 0	
Pearl lat	..	0 0 0	0 0	
United States Pot	..	0 0 0	4 4	
Feast	..gallon	4 0 0	4 4	
Soy, bd.	..			
SPICES—				
Cassia Lignea, ord. to mid.	..	6 0 0	6 2 6	B.P. 1d. F. 3d.
good to fine	..	6 2 6	6 5 0	per lb.
Cassia Buds	..	5 15 0	5 15 0	
Cinnamon, Ceylon, 1st quality	..	1 6 0	2 4	
2d	..	1 0 0	1 10	B.P. 3d. F. 6d.
3d	..	0 8 0	1 10	per lb.
Malabar	..	0 8 0	1 10	
Tellieberry	..	0 8 0	0 10	
Cleves, Amboyra	..	0 8 0	0 10	
Bourbon & Zanzibar	..	0 5 0	0 5 0	6d. per lb.
Penang	..	0 19 0	1 2	
Ginger, Bengal	..	15 0 0	2 10 0	
Malabar	..	17 0 0	3 0 0	B.P. 5s. F. 10s.
Jamaica	..	2 5 0	10 0 0	per cwt.
Barbadoes	..	0 0 0	2 7	
Mace	..	1 10 0	2 7	
Nutmegs, brown	..	2 0 0	2 9	2s. 6d. per lb.
White	..	1 4 0	2 0	
Pepper, bd. Malabar, heavy shot	..	0 28 0	0 32	
Light and half heavy	..	0 32 0	0 32	
Eastern	..	0 32 0	0 10 0	5s. per cwt.
White	..	0 0 0	0 0	
Long	..	0 0 0	0 0	
Pimento	..	0 4 0	0 5	5s. per cwt.
SPONGE, fine	..lb.	9 0 0	1 5 6	
ordinary	..	1 0 0	7 6	
SPIRITS OF TURPENTINE	..cwt.	1 14 0	1 15 6	
SULPHATE OF QUININE	..oz.	11 9 0	12 6	
SQUILLS, dry	..lb.	0 1 0	0 2	
undried	..	0 0 0	1 0	
SPERMACEANT, English	..lb.	1 4 0	1 5	
American	..	0 0 0	0 0	
STARCH, English	..	2 6 0	2 12 0	
Irish	..	0 0 0	0 0	1s. B.P. 3s. 6d.
POTATO FARINA	..	14 6 0	15 6	F. per cwt.
TALLOW:				
Petersburg, new	..cwt.	1 18 6	1 19 0	
old	..	1 17 0	1 18 0	
Delivery last three months	..	1 18 9	1 19 6	
South American	..	1 15 0	1 17 6	
Odeon Sheep	..	0 0 0	0 0	
North American	..	0 0 0	0 0	
Australian	..	1 15 0	1 17 0	B. P. 1d.
Town Tallow	..cwt.	1 19 0	0 0	Foreign
Fat by ditto	..	2 1 0	0 0	1s. 6d. per
Russian Candle	..	1 19 0	0 0	cwt.
Melted Stuff	..	1 9 0	0 0	
Rough ditto	..	18 0 0	0 0	

DRUGS, &c., continued.		Price.		
		£. s. d.	£. s. d.	
TALLOW:				
Graves	..	9 0 0	0 0	
Good Dregs	..	6 0 0	0 0	
PRICES OF CANDLES, per doz.:				
Mould Candles	..	6 0 0	7 0	
Store ditto	..	4 6 0	5 6	
TAMARINDS, West Ind.	..cwt.	1 10 0	2 10 0	B.P. 1d.
East Ind., bd.	..	13 0 0	16 0	F. 3d.
*TAPIOCA	..lb.	0 1 0	0 4 0	6d. per cwt.
TEA: bd.				
Bohea, Canton, & Woping	..	0 6 0	0 7	2s. 1d. per lb.
Pekien	..	0 0 0	0 0	
Congou, ordinary and out	..	0 9 0	0 9 0	
of condition	..	0 10 0	0 10 0	
good ordinary	..	0 10 0	0 10 0	
mixed blackish leaf	..	0 10 0	0 10 0	
rather blackish leaf	..	0 11 0	0 11 0	
blackish leaf	..	0 11 0	1 0	
ditto rather strong to	..	1 0 0	1 1	
strong	..	1 1 0	1 6	
Pekoe kind and flavour	..	0 11 0	1 6	
Ning Yung, fair to fine	..	0 9 0	1 0	
Pouchong	..	0 0 0	0 0	
Caper, chests	..	0 11 0	1 6	
do. in 10 lb. Catty boxes	..	0 0 0	0 0	
Campol, common	..	0 0 0	0 0	
good to fine	..	0 0 0	0 0	
Souchong, ordinary to good	..	0 9 0	1 2	
fine	..	1 4 0	2 0	
Flowerly Pekoe, flat	..	1 0 0	1 3 0	
fair to fine	..	1 6 0	2 3	
very fine and flowery	..	2 4 0	3 0	
Black leaf Pekoe or Hong	..	0 10 0	1 4	
Muey	..	0 11 0	0 11 0	
Orange Pekoe, faint & odd	..	1 0 0	1 1	
common to fine plain	..	1 1 0	1 9	
common to fine scented	..	0 10 0	0 11	
Twankay, common	..	1 0 0	1 1 0	
good	..	1 2 0	1 3	
fine to Hyson kind	..	0 10 0	0 11	
Hyson Skin, common	..	1 0 0	1 2	
good to fine	..	1 1 0	1 3	
Hyson, common	..	1 4 0	1 10	
fair to good	..	2 0 0	2 6	
fine	..	2 10 0	3 10	
extra fine	..	0 8 0	1 1	
Young Hyson, common	..	1 2 0	2 7	
good to fine	..	1 2 0	1 4	
Imperial, common	..	1 5 0	2 6	
good to fine	..	0 8 0	1 7	
Gunpowder, common	..	1 9 0	4 0	
good to fine	..	16 0 0	17 0	
TURNERIE, Bengal	..cwt.	10 0 0	13 0	
Java	..	10 0 0	14 6	
Madras	..	14 6 0	0 0	
TERRA JAPONICA	..cwt.	1 2 0	1 4 0	
Sienna	..	16 0 0	17 0 0	
VALONIA, Smyrna	..ton	13 0 0	14 0 0	
Picked Morea	..	10 0 0	2 12 6	5s. per cwt.
VANILLAS, Brazil	..lb.	1 5 0	1 10 0	
Vera Cruz	..	0 9 0	0 10	5s. per cwt.
VERDIGRIS, Foreign	..	1 3 0	0 0	
English	..	4 0 0	4 2	
VERMILION, China	..lb.	5 0 0	0 0	
English	..	1 8 0	1 10 0	
VITRIOL, blue	..	14 0 0	0 0	
Foreign, white	..	1 4 0	1 5 0	
English, ditto	..	0 1 0	0 9	
Oil of	..	5 17 6	6 10 9	
WAX, Mogadore	..cwt.	5 5 0	0 0	
American	..	7 10 0	0 0	
Russian	..	7 12 6	8 0 0	
Hambro'	..	5 10 0	9 0 0	
East India	..	5 0 0	7 0 0	
African	..	7 0 0	8 10 0	
White Hambro'	..	2 0 0	9 15 0	
English	..cwt.	5 15 0	6 15 0	
Cape	..	0 0 0	7 0 0	
West India	..	0 0 0	0 0	
WELD	..	0 0 0	0 0	
WOOD	..ton	0 0 0	0 0	
Wood, Sapan Bimas	..	1 0 0	1 15 0	
Siam	..	8 0 0	1 0 0	

POMMADE DES GRACES, OR BAUME'S POMMADE DE LAVANDE.—Take of fresh and clean lavender flowers 20 lbs., lard 5 lbs., white wax $\frac{1}{2}$ lb. Infuse in a close vessel over a water-bath, for two hours, 4lbs. of the flowers and the lard, and strain and express. Repeat this operation until all the flowers have been in contact with the grease. Macerate and wash the pomade in frequent waters to remove the extractive matter of the lavender flowers. Re-melt anew by a mild heat and pour into pots.

IMPORTS OF DRUGS, &c., INTO LONDON DURING THE WEEK ENDING WEDNESDAY, SEPT. 10.

THURSDAY, Sept. 4. —	In the Anna Margretha, from Copenhagen.
100 barrels tar.	
158 csks. tallow.	In the Columbine, from Havre.
124 bbls. carraway seed, 500 lbs. tin.	In the Diana, from Amsterdam.
	In the Bar n Holberg, from Hernosand.
3381 bars iron.	
3691 bars iron.	In the Avenche, from Sundswal.
600 qrs. linseed.	In the Dankbar, from Archangel.
3280 plts. spe.ter.	In the Luccothea, from Stettin.
700 qrs. linseed.	In the Albert, from Archangel.
FRIDAY, Sept. 5. —	In the William, from Hamburg.
1874 plts. spelter, 7 csks. blacklead, 161 bags juniper berries, 15 csks. copperas.	
	In the Dorothea, from Petersburg.
194 csks. tallow.	
	In the Washty, from Calmar.
1459 bars iron, 55 bbls. pitch.	
SATURDAY, Sept. 6. —	In the Paragon, from Archangel.
700 qrs. linseed.	
	In the William Chapman, from Gottenburg.
815 bars iron.	
MONDAY, Sept. 8. —	In the Gouverneur Van Ewyck, from Antwerp.
11 csks. rape oil.	
	In the Flecha, from Ghent.
18 bbls. zinc.	
	In the Charles Henry, from Gottenburg.
1162 bars iron.	
2483 bars iron.	In the Ernst, from Sundswald.
800 qrs. linseed.	In the Hoebe, from Archangel.
30 bgs. juniper berries.	In the Elbe, from Hamburg.
TUESDAY, Sept. 9. —	In the Albatross, from Gottenburg.
2289 bars iron, 438 bbls. steel.	
	In the Johns, from Marstrand.
44 bbls. cranberries.	
	In the Pero, from Stettin.
9221 plts. zinc.	
	In the Giffords, from Stettin.
4270 pcs. spelter.	
	In the Victoria, from Dantzic.
2136 plts. spelter.	
	In the Gustav, from Stettin.
6368 plts. spelter.	
WEDNESDAY, Sept. 10. —	In the Effort, from Petersburg.
250 csks. tallow.	
	In the Johanne Ernst, from Dantzic.
2800 plts. spelter.	
	In the Hebe, from Stettin.
3607 plts. spelter.	
	In the Fraternitas, from Stettin.
2300 plts. zinc.	
	In the Clara, from Dantzic.
2400 pcs. spelter.	
	In the Sarnia, from Hamburg.
9 bgs. coriander seed, 21 bgs. fæmun groenen.	

TO THE EDITOR OF THE CHEMICAL RECORD.

Sir,—In your journal of the 6th inst. I observe a letter from Mr. F. Hollier, of the Pharmaceutical Laboratory, Dudley, in which he speaks of the great good which has

come out of the Pharmaceutical Society. I shall feel, with many other chemists and druggists, obliged to Mr. Hollier to specify what good has come out of its institution.

That great good could come out of the society if properly conducted there can be no question about; but so long as it is conducted in the way it latterly has been, for the benefit of a few influential individuals, I hold it impossible that any good can arise.

I am, sir, yours respectfully,

London, Sept. 11, 1851.

D. P. Q.

P.S. I enclose my card, and you are at liberty to give my name and address.

COURT PLASTER.—Black silk is tightly fixed in a frame, and smeared with the following composition ten or twelve times:—*Composition for Sizing Court Plaster.*— $\frac{1}{2}$ oz. G. res. benzoin, in 6 oz. rectified spirit of wine, and 1 oz. isinglass, in 8 oz. water. The two substances to be dissolved separately, and the solutions mixed after being strained. Let the mixture stand quiet for a time, that there may be no undissolved matter suspended when it comes to be used. It will form a jelly when cool, and therefore must be warmed up at the time of laying on. The following varnish must be thinly laid on after the size:—Terebinth, 3iv.; dissolved in twit. benj., 3vj.

POMMADE DE LA PROVIDENCE.—Melt of body purified with rose water, 1 lb., and when cool add 4 oz. of pearl white, and 2 oz. Venetian talc, finely powdered. After a thorough incorporation by trituration in a marble mortar, it is potted for use. This also is a white rouge.

POMMADE D'ASAPASIN.—Take 2 drms. white wax, 2 drms. spermaceti, 4 oz. oil of sweet almonds, melt together over a water-bath, and add 3 oz. pure water; the mixture of the whole being effected, it is then poured into a marble mortar, and well rubbed up with the pestle until cool, and there are no longer any lumps. To improve this pomade add some drops of Mecca balsam and rose water.

TO CORRESPONDENTS.

. Gentlemen who send manuscript to the CHEMICAL RECORD under arrangement for payment are informed that original matter alone will be allowed to count; no abstracts, translations, or adaptations being receivable under the terms proposed. The propriety of this will be obvious.

"Mr. Hollier" is informed that the bitartrate of potash in question is adulterated with 25 per cent. of alum.

"An Assistant."—Soap was only known to the ancient Greeks and Romans as a pomatum for the hair, not as a detergent. Our classic ancients must have been very filthy in many of their habits. Sophocles describes Pallas, the Goddess of Wisdom, as moist with olive oil!

"Mr. Thomas Duncan" asks us why oil of poppies is known in some localities by the name of oil of pinks? Because the French term *safran*, a pink, is used in certain parts of France as a provincialism for a poppy, and translators unacquainted with this peculiarity have committed the error of representing the word *safran* by its regular, instead of its provincial, equivalent.

"Botanicus."—Rhodium-wood, from which the oil of rhodium is extracted, comes from the Canary Islands and from Cyprus. It is thought to be indigenous to the latter, and is often called cypress-wood.

"Mrs. Calloway" is informed that grease spots may be efficiently removed by a soap having the following composition:—Mix together some very dry white soap with alcohol, and, when the solution is complete, rub up with it the yellow of six eggs, gradually adding afterwards a little spirit of turpentine. When the paste is well kneaded, incorporate with it a sufficient amount of fuller's earth to give it consistency. It will remove most spots save those of ink and rust.—Ink for marking linen with a stamp is thus made:—Take sulphate of manganese, 1 drachm; distilled water, 1 drachm; powdered sugar, 3 drachms; lampblack, $\frac{1}{4}$ drachm. Make into a semi-liquid paste, to be used with a stamp. When dry, the mark should be washed with caustic potash, dried, and finally washed with water.—Sponge to be made fit for the toilet should be soaked for some days in dilute muriatic acid for the purpose of dissolving out calcareous particles, and, this being done, should be bleached by immersion for two or three days in a strong solution of sulphurous acid.

THE CHEMICAL RECORD AND DRUG PRICE CURRENT, conjointly managed by a CHEMIST, a PATENT SOLICITOR, and a LONDON BROKER, is published weekly, at its office, 17, Upper Wellington-street, Strand. It may be had through any bookseller or newsmen, and will be regularly furnished from the office to quarterly, half-yearly, and yearly subscribers. Price 6d., stamped 6d.; quarterly, 6s. 6d.; half-yearly, 12s.; yearly, 23s. Payment in advance.

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TESTIMONIALS.

From JOSEPH HENRY GREEN, F.R.S., President of the Royal College of Surgeons, London; Senior Surgeon to St. Thomas's Hospital; and Professor of Surgery in King's College, London.

I have made trial of Mr. Frank's Solution of Copaiba, at St. Thomas's Hospital, in a variety of cases of discharges in the male and female, and the results warrant my stating, that it is an efficacious remedy, and one which does not produce the usual unpleasant effects of Copaiba.

(Signed)

JOSEPH HENRY GREEN.

Lincoln's-inn-fields, 15th April, 1855.

From BRANSBY COOPER, Esq., F.R.S., one of the Council of the Royal College of Surgeons, London; Surgeon to Guy's Hospital, and Lecturer on Anatomy, &c.

Mr. Bransby Cooper presents his compliments to Mr. George Franks, and has great pleasure in bearing testimony to the efficacy of his Solution of Copaiba in Gonorrhoea, for which disease Mr. Cooper has prescribed the solution in ten or twelve cases with perfect success.

New-street, April 15th, 1855.

From H. A. CÆSAR, M.D., Surgeon, Professor of Anatomy in the Cork School of Medicine and Surgery; late President of the Hunterian Society of Edinburgh, &c. &c.

I have frequently prescribed Frank's Specific Solution, and deem it a valuable remedy in cases where Balsam of Copaiba may be prescribed with propriety, and have no hesitation in stating it is superior to any other preparation of the Balsam. (Signed) H. A. CÆSAR, M.D.

South Mall, Cork, Nov. 9th, 1841.

The above may be had of all Wholesale and of most respectable Retail Dealers in Medicine.

Mr. FRANKS may be consulted daily until two o'clock.

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THE GUTTA PERCHA COMPANY beg to state that they are prepared to supply every variety of Vessels for Acids to order; such as

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The following letters afford evidence of the value of GUTTA PERCHA for Acid Vessels:—

From Messrs. BROWNE and WINGROVE,

GOLD-REFINERS, LONDON,

(Copy.)

SIR,

30, Wood-street, Cheapside, London,
24th January, 1860.

Having had in use for the last three months vessels lined with Gutta Percha for the reception of dilute Nitric Acid, we beg to state that in every respect the Gutta Percha is as good and as firm even as the first day it was used, and so highly satisfied are we of its valuable properties in resisting the action of this description of acid, that it is our intention to adopt it generally for every description of article or vessel to which we can apply it in our process of refining. Before we had fully made up our minds for introducing Gutta Percha into our Works, we submitted it to the severe test of a twelvemonth's trial in strong nitric acid, when the surface of the Gutta Percha was injured, while the interior was sound.

We have not the least doubt of its powers in resisting the action of dilute nitric acid such as we use, and that it can be extensively and profitably employed by us for this purpose.

We remain, Sir,

Yours obediently,

To Mr. Statham,
Gutta Percha Company.

BROWNE AND WINGROVE.

Anxious to ascertain the DURABILITY of Gutta Percha as a lining for Acid Tanks, a second application was made to Messrs. Browne and Wingrove (after the Tanks had been in use about fifteen months), and the following reply was received:—

(Copy.)

GENTLEMEN,

30, Wood-street, Cheapside,
27th November, 1860.

In answer to your inquiry with regard to our experience in the use of Gutta Percha, and whether it meets with our expectations, we have to return our most unqualified approval, both as to its capabilities and adaptation to our uses. We are highly satisfied with the article, and find it much the cheapest and safest we have hitherto employed. With regard to the specific gravity of the Acid to which the Gutta Percha is exposed we have never tried it, but the liquid contains near upon one-fifth of Acid at a temperature of 90 or 100 degrees.

We remain, Gentlemen,

Yours obediently,

BROWNE AND WINGROVE.

From Messrs. E. and J. STURGE,

CHEMICAL WORKS, BIRMINGHAM.

(Copy.)

Birmingham, November 25th, 1860.

In reply to your inquiry we are glad to record our continued satisfaction in the use of Gutta Percha for Tubing, Carboys, and other vessels; after more than twelve months' constant use, we are unable to trace the slightest action of Muriatic Acid upon them.

As far as our experience has yet gone, the material is equally proof against the corrosion of strong Alkalis, and also Sulphuric Acid, except at a high density.

THE NEW CORRUGATED FUNNELS ARE PARTICULARLY RECOMMENDED.

EVERY VARIETY OF VESSEL MADE TO PATTERN.

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Gutta Percha Carboys. The Gutta Percha Company

have been favoured with the following letter from

MESSES. JAMES MUSPRATT AND SONS, OF LIVERPOOL.

(Copy.)

Liverpool, 8th September, 1880.

Gentlemen,—In reply to your favour of yesterday, we give it as our opinion that cool Muriatic Acid has no effect on the Gutta Percha. We have now had it in use for nearly a year, and we have no doubt, that in a short time, nothing but Gutta Percha will be used for conveying Muriatic Acid. For, although rather expensive at first, it soon pays for breakage and baskets of glass carboys.—Yours truly,

JAMES MUSPRATT AND SONS.

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Prout has characterized the discovery of it as apparently unfolding the germs of immense benefit to mankind, certainly of importance equalled only in the annals of medicine by those of the illustrious Harvey and Jenner.

To the intelligent but uninitiated in the art and mystery of medicine it is merely necessary to recall the fact that at one period all parts of the body were in a fluid state, and daily and momentarily since have derived their nourishment and support from the vital current—the necessity of keeping that fluid supplied with the stimulus which is the true cause of its action is most important, and must be apparent to all.

Dr. Yeoman, speaking of the Pyretic Saline, in the *People's Medical Journal*, 29th April, 1851, says, "For a cooling, refreshing, and wholesome spring or summer beverage, we know of nothing better than a tumbler of fresh water and a teaspoonful of this preparation. We speak from proved and personal experience, and cordially recommend our readers to test it in like manner."

Those who from choice drink water, or from necessity take that which has filtered through chalk, should use frequently the Pyretic Saline, to prevent the injurious consequences arising from its being surcharged with that substance. It has been proved, beyond all doubt, that these Salines are the means Nature uses to hold in solution the lime necessary to the formation of bone in the body,—hence a deficiency will account for gout, gall stones, and other painful affections.

In connection with these facts it is necessary to associate the name of LAMPLOUGH, Chemist, 88, Snow-hill, London, whose reiterated attempts during past years have been eminently successful in manufacturing the Pyretic Saline in an agreeable, cheap, and efficacious form, suited to all constitutions; for, like natural food, they assimilate with it, and are taken up by the absorbent vessels, diffusing themselves again through the system, thus supplying the continuous waste of natural secretions, however great or varied they may prove.

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(From *Mitchell's "Newspaper Press Directory"* for 1851.

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(From the *Gateshead Observer*.)

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The business of this Company is divided into three principal branches. First.—The Assurance of Life and all the ordinary transactions of Assurance Offices. Secondly.—The advancing an amount in connection with the Policy, and the effecting all pecuniary arrangements connected with Life Assurance. And, Thirdly.—The Granting Annuities (both immediate and deferred), and Endowments, upon a plan adopted only by this Company.

THE ASSURANCE OF LIVES.

The following are among the Advantages offered by this Company:—Tables of Premiums of Assurances, founded upon the most recent return and the combined experience of existing Life Offices, calculated, for the express use of this Company, at the lowest rates, consistent with perfect security.

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All Policies issued by this Company are indisputable; that is, the payment of a Policy cannot be disputed or delayed on account of any error or mis-statement in the proposal.

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Assurances effected for £20, and upwards, upon the payment of one single Premium; or of ANNUAL Premiums; or upon a limited number of payments, or on a gradually decreasing or increasing scale; or the premiums may be paid half-yearly, or quarterly, if more convenient.

The opportunity of obtaining an Advance in connection with the Policy, upon advantageous terms peculiar to this Company.

Assurances effected upon the participating scale, or, if preferred, upon a lower scale, without participation in the Profits.

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Persons Assured so as to be entitled to the Amount of the Policy, either at a given age, say 60, or upon their death, should it occur previously to such age; thus, by the investment of a small portion of their incomes, securing a provision for themselves in their old age, or for their families, should they die before the specified period.

Persons Assured with this Company may reside in any part of Europe, without extra charge; and, if they have occasion to proceed to any other part of the world, can keep up their Policies upon payment of an increased rate, commensurate with the risk incurred; which extra rate will cease upon their return to Europe, in a good state of health.

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Whole-world Policies are granted to persons assuring the lives of others on payment of an extra rate.

No admission or entrance fee required, nor any charge made for the Policy beyond the amount of the stamp.

Patties desirous of discontinuing the payment of their Annual Premiums may dispose of their Policies to the Company, for a sum of money payable immediately; or, on surrendering them, may obtain a new Policy, without any further Annual Premium, for a sum to be agreed upon, payable at the death of the life assured. The person to whom such new Policy is granted may be entitled, in respect of it, to participate or not in the profits to be periodically distributed.

Claims paid three months after satisfactory proof of death, or earlier, upon rebate of interest until the specified time of payment.

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ORIGINAL SERIES.

ON AGRICULTURAL CHEMISTRY.

By M. P. JOIGNEAUX.

Animal manures are the most energetic, the most powerful of all; but their decomposition is so rapid that the farmer has to diminish it artificially, so as to avail himself of the various ammoniacal products given off; or he may proceed to absorb the ammonia by means of a solution of green copperas—sulphate of iron.

The nature of animal manures is best explained by reference to their chemical composition. Thus, bones not only contain nitrogen, but also salts of lime (phosphate and carbonate), a little phosphate of magnesia and of soda, also chloride of sodium, or common salt. Animal flesh, or muscle, contains about fifty parts of carbon, and twenty of nitrogen or azote; intestines, skins, feathers, and organic débris of tanneries, also contain a large quantity of carbon and nitrogen, although less than flesh itself. Wool contains more than 50 per cent. of carbon, and more than 12 per cent. of nitrogen, in addition to the oxygen and hydrogen which enter into the constitution of all animal matters. Animal excrement and boneblack are equally rich in carbon, and in earthy salts; they also contain nitrogen.

Blood contains, in each 100 parts, a little more than 50 parts of carbon, and about 16 of nitrogen.

Urine contains sulphates of potash and soda, common salt, phosphate of soda, of ammonia, of lime, and magnesia, hydrochlorate of ammonia, and a principle very rich in nitrogen, termed urea; a principle which is exceedingly subject to alteration, to which cause we must ascribe the remarkable facility with which urine runs into decomposition. Nothing can be more regular than the composition of urine. It is sufficient for us to know that the urine of herbivorous animals is more alkaline than any other, and that the urine of canivora is more rich than the former in azote.

Colombine, or the refuse of doves, is very rich in urea and uric acid, both of which are very highly azotized substances.

The composition of purin, or the leakings of dunghills, is pretty nearly the same as of urine much diluted, and holding vegetable humus in solution. Ammoniacal liquors resulting from the distillation of bones contain a great quantity of nitrogen.

Having, then, enumerated the composition of various animal manures—we find that their agricultural agency is due to the presence of carbon, nitrogen, phosphates, common salt—sulphates of potash and soda, &c. Such are the principles, variously united, which constitute the excellence of urine, bones, flesh, &c., as manures.

The presence of all these bodies is not rigorously indispensable, however, to the constitution of a good manure, and in certain cases one may form an efficient manure from substances merely containing carbon and nitrogen; for these bodies are incontestably the most important vegetable aliments; they stand, indeed, in the same relation to vegetables as hay and oats stand to horses. With regard to manures, the precept should ever be borne in mind that, in proportion as they are varied in their composition, so are they profitable as vegetable aliments. Not only as regards animals, but also in the case of plants, it is good to have a variety of food, of which a choice may be made.

The greater amount of carbon and nitrogen that a substance contains the more influence does it exert on vegetation. Animal flesh is a stronger manure than blood, and blood is a stronger manure than wool. These three substances are almost equally rich in carbon, but a great difference exists in the amount of nitrogen; of which flesh contains more than blood, and blood more than wool,—hence the difference of the agency of these substances on plants.

But it does not follow as a consequence of my remarks that all vegetables must indiscriminately be presented with manures rich in nitrogen; for if this element produces in plants an apparent vigour, a plumpness, a luxuriant appearance.

ance of vegetation, it must be also remembered that it damages the quality of the products by predisposing them to a rapid fermentation; in a word, it hurries them forward to decay.

Animal manures are applicable to every variety of land but principally to those of a cold nature, and sodden with water. Should the season have been unusually wet they may be applied advantageously to arid and sandy soils; but when applied for this purpose it is always desirable to mix them with river mud or green manure.

Although, then, I recommend animal manure in reasonable amount for every sort of culture, I *specially* recommend it in the cultivation of those plants which appertain to the family of cruciferae;—to the well-being of which a certain amount of nitrogen seems absolutely necessary. These cruciferae are the cabbage, mustard, radish, turnip, &c., plants which during the change of putrefaction disengage a large quantity of ammonia; that is to say, a combination of hydrogen and nitrogen.

In the case of other vegetables we shall do well to diminish the dose of animal manures, and to augment the quantity of those which have potash for their basis—manures which agree with all vegetables, but more especially with such as are furnished with very deep roots; and this for the very simple reason, that potash salts dissolve in water, and descend low into the earth, whilst animal manures for the most part become decomposed at the surface of the soil, and liberate ammonia, which, being volatile, readily flies off into the air.

With the exception of bones which are employed after pulverization—with the exception of cuttings of wool, and water of dunghills, of which the effects resulting from decomposition are not to be feared, nearly all animal manures require some precautions on the part of the agriculturist. They should not be distributed fresh, because the acridity of their emanations would be productive of highly injurious consequences. Hence urine is the better for keeping; and colombine, and human excrement, are in the same category. As regards flesh and blood, it is a good rule not to employ them until they have begun to evolve ammonia; to prevent the further emanation of which they should be sprinkled with a solution of green copperas (sulphate of iron), or else they should be disinfected with animal charcoal, in a very divided state.

All farmers know well, from actual experience, the benefit derivable from animal manures in general; but there is one in particular concerning which a considerable amount of incredulity is expressed—I here allude to the manure resulting from the cuttings or parings of wool. Notwithstanding the composition of this matter, already indicated, is perfectly well demonstrated—notwithstanding that actual figures exist demonstrating the excellence of its practical results—farmers are at present far too ill-conversant with the extreme value of this sort of manure.

In Burgundy the vine cultivators have begun to manure their crops with this substance; and, notwithstanding its great importance, fears may be justly expressed whether, for the purpose of vine culture, the exclusive use of wool parings may not, after the lapse of a few years, prove disadvantageous. The vine does not content itself with carbon and nitrogen, as is well known; hence, simultaneously with the use of wool parings, the use of potash salts should not be neglected. By the term potash salts we mean certain natural products containing these salts—such as wood ashes, marc of grapes, lees of wine, soap dregs, and green manures.

The greatest disadvantage attendant on the employment of urine and faeces is that they sometimes communicate to the growing vegetables a disagreeable taste. But if, before employing them, the farmer mixes them with earth, so as to form a compost, and allows them to remain until the period of putrid decomposition has passed, then there will be no fear of the ill results I have just named.

Vegeto-animal manures are, as their name implies, compounds of animal with vegetable bodies. They consist of horsedung, sheep and cow and swine dung, drainage of dunghills, &c. The two former are classed amongst hot or stimulating manures, the others are denominated cold manures. As regards dunghill drainage it may be termed

hot or cold according to its degree of aqueous dilution. The dung of horses fed upon dry food contains more nitrogen and less water than any other, for which reason it has most force as a manure, and runs most rapidly into decomposition; after this follows the manure of sheep; less heating or stimulating than which is the manure of cows; and least of all that of swine, which is a cold manure par excellence, for it results from an alimentation very aqueous and but little azotized. Cold manures decompose more slowly than others, and, containing a large amount of water, they are applied with reason and efficacy to soils of a light and arid character, the humidity as well as the productive agency of which they maintain. On the contrary, hot or stimulating farmyard manures belong to argillaceous cold and humid districts.

Horse manure is directly valuable in proportion to the quantity of nitrogen which it contains, which depends on the amount of dry food the animals have consumed, from which it follows that the manure of post or carriage horses is best of all. It is not aqueous, like that of the cow and swine, and therefore the farmer need be under no apprehension that it may damage a soil by the amount of water it imparts.

Sheep litter is a very active manure, advantageous, like the preceding, to white and cold lands, and principally adapted as manure for cruciferous plants. We can easily understand the predilection of vegetables of this class for sheep manure when we consider the large amount of ammonia evolved by it in a given time, in addition to a notable quantity of sulphuretted hydrogen. This last gas is also disengaged from cruciferous plants undergoing decomposition, as may be easily determined by the resulting disagreeable odour. Now, to demonstrate chemically the presence of sulphuretted hydrogen gas in sheep manure we need only expose to the fumes it evolves whilst undergoing decomposition a slip of paper dipped in sugar of lead solution, when the paper will be immediately tinged with black. If sheep manure be used for the dressing of choice vines, the quality of product becomes altered; if employed for manuring delicate vegetables used as food, the crop acquires a disagreeable odour and taste. If, again, wheat be manured exclusively with sheepdung the resulting corn will yield a flour most difficult to be manufactured into bread. It rises with difficulty or not at all, and whilst in the oven it loses its coherency and sinks down,—peculiarities which seem to depend on the presence of sulphur in the corn.

If the manure of cows be less rich than those already mentioned in azotized matters, it is, on the other hand, more rich in salts of potash, and for this reason better adapted to be applied to the culture of delicate plants, and such in general as possess deep roots. The nitrogen of hot farmyard manures never sinks so low as the roots; it disengages in the air, whilst, on the contrary, the salts of potash and soda descend into the ground.

Cow litter which is very much decomposed, that is to say, disembarassed of the greater part of its azotized materials, may be without fear employed for choice vines, and for the manuring of vegetables of delicate taste and odour.

The litter of swine is less azotized and more aqueous than that of cows, to which it is inferior in quality, a circumstance which depends upon the inferior aliment with which swine are habitually fed—as is demonstrated by the fact that swine which are fed on acorns and potatoes yield a litter much more valuable as a manure than result from swine which are fed on a more herbaceous nutriment.

Generally speaking it may be said that this kind of manure contains a quantity of seeds not yet dead, and which consequently may reproduce an injurious amount of noxious plants; and hence, before spreading it over meadow lands or flax districts (in which latter it does wonders), the farmer should mingle it with the manure of horses, and allow both to ferment together in one mass.

(To be continued.)

VINAIGRE À LA FLEUR D'ORANGER.—Fresh orange flowers, 1½ lb., vinegar, 8 qts., brandy à la fleur d'oranger, 1 qt. Macerate for twelve days and filter.

PROGRESS OF SCIENCE AT HOME AND ABROAD.—TRANSACTIONS OF SOCIETIES, COMMUNICATIONS, &c.

PARIS ACADEMY OF SCIENCES.

Sitting of September 16.

PHOTOGRAPHY.—NEW PROCESS FOR OBTAINING POSITIVE PROOFS ON GLASS.

By M. LEMOYNE.

M. Regnault laid before the Academy a series of photographic positive proofs on glass, obtained by means of the following process, by M. Lemoine, engineer of the *Ponts et Chaussées* at Limoges:—

The process employed by M. Lemoine is completely a practical one, and has been used by him for the last twelve-month. The principal part of the experiments was undertaken with a view of removing the inconveniences arising from the employment of albuminized plates. Independently of the positive proof, M. Lemoine has made considerable progress in the production of impressions by the following modifications, which in reality form a new mode of preparation:—

1. Purification of the albumen of white of eggs, by allowing it to become quite stale, and even adding a small quantity of sugar to produce a slight fermentation, which serves to clarify the albumen much more effectually than the plan of beating it to a froth, as generally adopted. This first addition of sugar, in the proportion of half a gramme to the white of one egg, does not interfere with the subsequent addition already recommended of 2½ to 3 grammes, for the purpose of obtaining a greater degree of sensitiveness to the action of the light.

2. Iodizing the albuminous coating, when dry, by immersion in a bath of tincture of iodine, to which one-tenth of its volume of nitric acid at 40° Beaumé has been added.

3. Doing away with acetic acid, and employing a simple solution of nitrate of silver (at 1-10th), in order to render the plates sensitive.

4. The employment of a second bath of nitrate of silver (at 1-20th), after washing the plates with fluoride of potassium, which is used as an accelerating agent. The object of this operation is not only still further to increase the sensitiveness, but more especially to transform the excess of fluoride of potassium into fluoride of silver, and thus prevent its reacting on the glass, and stripping off the albuminous coating.

5. The substitution of a bath of concentrated solution of sulphate of iron, at a temperature of 90° C., for the gallic acid generally employed in order to render the picture apparent. The result of this modification is, to produce a very considerable increase of sensitiveness; besides this, the elevation of temperature enables us to obtain pictures of a very bright tint. The opacity also is less than by the other processes, whilst the reproductions on paper possess a softness, and at the same time a delicacy, the absence of which has hitherto raised objections against the employment of albuminized glass plates.

6. Fixing the proofs in from four to five minutes, by the complete solution of the iodide of silver, by means of a bath, to which a suitable proportion of cyanide of potassium and hyposulphite of soda has been added.

M. Lemoine considers this mode of fixing as in all respects superior as well to the bromide of potassium as to the hyposulphite of soda generally employed alone. He states that it gives in a very short time, and without any injury to the proofs, not only a fixity in all respects unobjectionable, but also complete transparency to the unimpressed parts. It produces a considerable increase of adherence throughout the whole of the coating, whilst it further admits of ready application to all the known photographic processes on glass, and even on paper.

The proofs obtained by this process are formed of opaque pictures of a yellowish-white colour, in a diaphanous me-

dium, and consequently present either a positive or negative aspect, according as they are placed on a dark or a clear ground. As negative proofs they stand the variations of temperature better, they are also more transparent, and, therefore, are reproducible with a less powerful light. As positive proofs they possess a distinctness and delicacy equal to metallic plates.

As to the time required for the luminous impression, M. Lemoyne states that he has obtained landscapes in the sunshine in one second, with a half-plate object-glass of compound glasses, furnished with a diaphragm of 0.03 m. aperture; and portraits in the shade, out of doors, in four or five seconds; and in doors, in from eight to fifteen seconds, with the same object-glass and without a diaphragm. The proofs are also naturally in the right position, so that, if the metallic plate possesses the advantage of rapidity, it loses this advantage, inasmuch as it requires the use of a rectifying apparatus.

ON THE SUGAR OF THE ACORN. By M. DESSAIGNES.

In a written communication to the Academy, M. Dessaignes stated that he had made a chemical examination of the peculiar saccharine matter discovered by M. Braconnot to exist in the acorn of the oak. M. Braconnot considered this saccharine matter to be sugar of milk; but, as he had but a very small quantity of it placed at his disposal, he was unable definitely to establish the identity of the two substances. M. Dessaignes, having prepared several grammes of this saccharine matter, has proved, from an examination of it, that it is a substance, *sui generis*, quite distinct from sugar of milk, and very different in its composition and characteristics from all known saccharine bodies. Mannite and dulcose are the substances which the most nearly resemble it. The following are some of its characteristics:—

The sugar of the acorn crystallizes in very beautiful prisms, which remain completely transparent when produced by the cooling of a weak alcoholic solution. Heated to 210° C., it loses more of its weight. At 235° C. it melts, and emits a vapour which condenses in a crystallized sublimate. At this high temperature a very small quantity of sugar undergoes change, with the production of a black substance; the remainder, when taken up by water, crystallizes without alteration. With ordinary nitric acid it gives by the aid of heat oxalic acid, without any admixture of mucic acid. Rubbed in a mortar with concentrated sulphuric acid, it dissolves without being coloured, and forms an acid, the lime salt of which does not crystallize. Acted upon by a mixture of concentrated sulphuric and nitric acids, it forms a nitreous detonating substance, possessing the appearance of white resin, insoluble in water, soluble in hot alcohol, but not crystallizing, and differing in this respect from nitro-mannite. The aqueous solution of this sugar may be heated for some time with caustic potash without becoming coloured, and without disengagement of the odour of burnt sugar. It dissolves lime sparingly, but baryta readily.

The sugar of the acorn mixed with yeast does not undergo vinous fermentation; nor, when mixed with cascum and water, and left for a month in summer to putrify, does it produce any lactic acid, but remains unaltered. It appears to possess the same composition as mannite, minus the elements of water, viz., carbon 43.90, hydrogen 7.81, oxygen 48.79.

(Continuation of M. Clerget's Communication, vide p. 9.)

The juice of the beetroot, having been introduced into a matras, the capacity of which is known, and having two graduated marks on its neck, one of which indicates the total capacity, and the other the one-tenth part of that capacity, is defecated by means of a solution of subacetate of lead of a suitable strength. It is then filtered, examined by means of the polarimeter, and noted, then acidulated and noted again, after which it is treated with a solution of soda of such a strength that one-tenth in volume of this solution shall exactly neutralize the acid contained in the liquor.

This is now submitted to a third notation, which, when compared with the preceding, denoted a certain deviation of the plane of polarization from right to left. Now, as this deviation is the expression of the inverse power which the substance mixed with the sugar exercises in its state of combination with the acid, and as this power has entirely reduced the value of the initial notation of the acidulated liquor, we must, in order to obtain the real appreciation of the inversion, add its figure to that of this notation. On the other hand, it must be observed that the value of the action from left to right, which the saturation of the acid has destroyed, gives that of the first action in a direction contrary to that which the substance exercises previous to the acidulation of the liquor. The relation between these two powers, as shown by several experiments, is, according to M. Clerget, in the proportion of 7 to 2. These are the two-sevenths of the sum of the power destroyed by the saturation of the acid which represents the initial deviation from right to left of the active substance present other than sugar; if, then, these two-sevenths which here directly diminished the notation of the juice are restored to it, a just appreciation of the latter is obtained, as well as the exact determination of crystallizable sugar present.

M. Clerget states that the correctness of this mode of analysis has been verified by syntheses of the most complex character. Thus, after having formed mixtures of dextrine, glucose, asparagin, and crystallizable sugar, the quantity of the latter was correctly determined by the use of the above-mentioned process.

Chemical Record

AND

DRUG PRICE CURRENT.

SATURDAY, SEPTEMBER 20, 1851.

SAUSAGES—THEIR COMPOSITION—THEIR CHEMISTRY—THEIR CONSEQUENCES.

THERE cannot be the slightest doubt, according to our opinion, that there exists an intimate and most philosophical relation between the physical aliment of man and his moral and intellectual exaltation. Train oil and whale blubber are descriptions of food not only endurable but absolutely necessary to the Esquimaux; who, living in an inhospitable clime, and devoid of every aid which science lends to more civilized man, are obliged, whether they like its taste or not, to generate animal heat by a large ingestion of disgusting fat. But who shall say that the Esquimaux, as the march of civilization goes on—who shall say that the Kamatchbdales, the Laplanders, and the other inhabitants of the chilly North—may not hereafter revel in all the luxurious comforts of London or brilliant dissipation of Paris—who shall say they are not some day to build houses well protected by double windows against the cold, recline on velvet sofas, read a civilized broadsheet, and warm themselves with that most genial of all calorifiers, a Noirsain's stove? And is it to be assumed that, this great revolution being achieved, the Northerners would continue their filthy gorgings of whale blubber? We think not. The physical necessity for wholesale fat-eating would have ceased, feelings of the beautiful would have arisen, and our Northerners would stimulate their palates with the culinary marvels of civilized life.

The connection which we have established between the food of the Esquimaux and the intellectual depression of

that people might be varied to meet the case of every nation under the sun; the principle which we have thus applied specifically might be extended universally; but we have neither time nor space for this, and so must plunge in *medias res* at once.

Let us express our deliberate opinion then, and we do it with much sorrow, that the delicious animal confection commonly known by the name of a sausage is by no means adapted to the conditions of present English society. The peculiar nature of a sausage is such that its manufacture, we are inclined to think, should only be undertaken by a people who had arrived at a very high grade of moral and intellectual advancement—a people to whom the proverb, "Do unto all as ye would be done unto," should be a real, living, moral principle, not a mere dead letter—a people who could feel and implicitly believe in that mysterious connection of human influences by virtue of which it is that any single action of good or evil done to one individual, or one branch of a community, does not end there, but expands like waves, which the dropping pebble sets in motion on the surface of a pond—over the whole length and breadth of society.

To this enviable pitch of human excellence the London community has not arrived; therefore, however much this food may tickle the palate, they ought not to be entrusted with the manufacture of sausages. Once mixed up with spice and salt, and stuffed into those lucid skins, the chemical acumen of Orfila himself could not discriminate the animal tissue out of which any particular sausage was made; and, except some stray claw should now and then display itself—or a tuft of long hair—whether cat or dog, cow or donkey—were within—the sausage-eating world would be totally uninformed.

Now, if the sausage manufacture involved no other issue besides the employment of animals against which there existed merely a prejudice, we should not have felt ourselves called upon to interfere. We do not believe the eating of cats and dogs, donkeys, horses, and the like, would be productive of any sort of physical harm; therefore we might safely allow the supply of these viands to be regulated by their demand—interfering in no degree with any person's gustatory taste; but the case is otherwise. Those acquainted with chemistry well know that sausages occasionally, even when made with unexceptionable materials, undergo a fermentation having for its result the production of a highly dangerous poison; a poison which has been isolated, and with which experiments have been made. In the violence of its action this sausage poison approaches very nearly to prussic acid and the most dangerous of the alkaloids; and when partaken of in the form of sausages entire families have been killed. In England, where our sanitary regulations are so loose, this kind of provisions has never, to our knowledge, evoked any large amount of public attention; but in France and Germany it has come under the cognizance of the legal authorities again and again.

If, then, meat in every way unexceptionable do sometimes, when made into sausages, undergo this poisonous fermentation, what are we to expect of that which has been prepared when in a state of disease? It is useless to appeal to the effects of ingesting such food; the effects are merged into the summary chronicling by the Registrar-General, of disease and death; but shall it, therefore, be inferred that they do not exist?

Our remarks are called forth at this time in consequence of an event which recently occurred. The *Apollo* Rotterdam screw-steamer on Sunday, September 7, struck on the Kentish Knock, thirty or forty miles from the entrance to the Thames; the passengers were saved, but the cargo (chiefly live animals for the London markets) was lost. Perhaps the latter expression, however, is unadvised, seeing the animals were washed ashore near Ramsgate, purchased for 1s. 6d. per carcase, sent to London, and some of them were subsequently found hanging for sale in Newgate Market, where Mr. Pocklington, the inspector of meat in that place, having recognised them to be putrid, insisted so strenuously on their removal that he was accused by the proprietors of those frightful carcasses with manifesting too great warmth of temper!

In accordance, however, with the decision of Alderman Salomons, before whom the case was brought, the carcasses were condemned. What use these carcasses were intended for it needs no chemist to point out: the sausage skin would have formed a convenient receptacle, and any fatal consequences arising from such food would have merged unnoticed into the periodical bills of disease and mortality. So frightful a case of attempted imposition of the kind has never come under our notice before. The non-chemical public is little aware of the consequences the ingestion of these drowned and water-sodden carcasses might have produced; for the action of water, salt or fresh, is known to be powerful in developing the poison of which we have spoken, or, at any rate, a poison so like it as not to be distinguishable by chemistry. In toxicological writings will be found narrated the particulars of a whole family being poisoned by eating of a calf washed ashore on the coast of Ireland; and special experiments made with reference to the generation of animal poisons have shown that, under the agency of water, animal tissues may be caused at pleasure to assume a noxious state precisely similar to that acquired by the drowned calf which we have indicated.

In these days, when so large an amount of our animal produce is imported—when dead, water-sodden pigs and calves may be seen lying about the wharves where the cattle-bearing steamers discharge—it may be worth while for the inquirer to propose to himself the questions, what these unhealthy corpses are good for, and where they go?

REVIEWS.

SMEE'S ELECTRO-METALLURGY.*

Although the beautiful art of electro-metallurgy is scarcely a dozen years old, the progress made in it has been so rapid, the number of readers to whom a knowledge of electro-metallurgic principles is necessary has so largely increased, that the first two editions of Mr. Smees treatise were not only rapidly sold, but as the copies of the second edition became scarce they rose in value, to as much as two guineas, thus demonstrating the estimation in which they were held by those whom they concerned. A third

* *Elements of Electro-Metallurgy*. By Alfred Smees, F.R.S., Cms. Acad. Naturæ Curiosorum Hon. Soc.; Senior Surgeon to the Royal General Dispensary, Aldersgate-street; Surgeon to the Bank of England, to the Central London Ophthalmic Hospital; late Lecturer on Surgery, etc. etc. Third edition, revised, corrected, and considerably enlarged. Illustrated with electrotypes and numerous woodcuts. London: Longman, Brown, Green, and Longmans, 1851.

edition of the work being thus unmistakably called for, the author responded by incorporating with his previous treatise the various new discoveries in electro-metallurgy which a general application of the science to practice had in the course of a few years developed.

However profitable may be the function of Mr. Smee's surgical occupations, however advantageous to his fellow-men—we, as chemists, own to the failing, if failing it be, of regretting that this gentleman, to whom science owes so much, has so intimately allied himself to the ranks of surgical practitioners, and become so actively engaged in the duties of his profession—that electro-metallurgy is not likely to have much of his active attention again.

If, however, Mr. Smee in this, his third, edition has been unable to enrich the purely scientific portion of his work with fresh results of his own investigation, he has done what to a certain class will be more useful still—in presenting us with the accumulative experience of electro-metallurgic artisans:—

"The first and second editions," remarks the author, "held out prospective advantages to the manufacturer; the present enables us to take a review of that which electro-metallurgy has absolutely effected. In the former editions the economical relations of the subject were so carefully considered, that it has given me great pleasure to find that the stimulus of remuneration has been so effective that electro-metallurgy in no way falls short of the sanguine expectations then formed of it, but, on the contrary, has actually advanced in more extended spheres of operation."

Independently of the chemical beauty of electro-metallurgy, regarded as a branch of physico-chemical science, and the extreme number and utility of its commercial applications, the historical interest of electro-metallurgy is very great. Few subjects of equal importance have been developed into commercial shape in so small a time. The very experiments which brought it into existence are within our cognisance; the names of the experimenters are familiar to every scientific chemist; and still it is difficult to say with certainty to whom the precise merit of being the first discoverer of the electro-metallurgic art belongs:—

"Electro-metallurgy may be said to have had its origin in the discovery of the constant battery by the late Professor Daniell, for in that instrument the copper is continually reduced upon the negative plate. In his first experiment this distinguished author observed, on removing a piece of the reduced copper from a platina electrode, that scratches on the latter were copied with accuracy on the copper. In this experiment we have the electrotype; but the author, in the first paper detailing his experiments, had devoted all his attention and centred all his energies to the construction of the battery itself, and this valuable fact attracted but little of his notice. My much-respected teacher lives indeed no more, to his pupils, his friends, or his family; but he lives to all time, from the profound researches which led to the construction of his battery. It may be true that the particular form of battery itself is now but very seldom used; but, if that battery had not been invented, electro-metallurgy would doubtless not have been added even now to our range of sciences. The name of Daniell is always, in my mind, intimately connected with electro-metallurgy; and probably the professor himself little thought of the important results which would accrue from the invention of the battery, when he first made it known to the public.

"It was but a short time after the discovery of this battery that Mr. De la Rue experimented on its properties. In a paper printed in 'The Philosophical Magazine' for 1836, after describing a peculiar form of battery which he adopts, the following remarkable passage is found:—"The copper plate is also covered with a coating of metallic copper, which is continually being deposited; and so perfect is the sheet of copper thus formed, that, being stripped off, it has the counterpart of every scratch of the plate on which it is deposited." This

paper seems to have attracted very little attention; and, what seems still more singular, the author, although well qualified from his scientific attainments to have applied these facts, never indicated any practical benefit to which this experiment might lead.

"In this state the subject remained till October, 1838, when Professor Jacobi first announced that he could employ the reduction of copper, by galvanic agency, for the purposes of the arts. His process was called galvano-plastic. Immediately upon his discovery being announced in this country in 1839, Mr. Spencer stated that he had executed some medals in copper, to which the public afterwards gave the name of electrotypes or voltatypes, or, what is better, electro-medallions.

"Now, what is the precise value of the discovery of these productions over the facts already described?—for we have seen that the reduction of the copper as a perfect plate, taking the exact form of the negative medal on which it was deposited, had been already noticed. Why, it is simply the idea of the application of these facts; but that idea has been everything for electro-metallurgy. The only apparatus which Mr. Spencer employed was, in fact, a simple Daniell's battery. He employed various metals for the reception of the precipitated metal, which, however, was nothing new; but he does not seem to have succeeded with any non-conducting substances. He executed medals, and perhaps duplicate copper plates; but he does not give any details, as to the different methods for the reduction of the copper in different states, neither did he succeed with the reduction of any other metal. However, to Mr. Spencer the British public are principally indebted for the idea of the electrotype; and perhaps the idea, as far as relates to its application in Great Britain, originated entirely with himself.

"Mr. Spencer's first paper was printed in the Journal of the Polytechnic Institution of Liverpool, in 1839; but the author complains that, by mismanagement, it was prevented from being read at the British Association. Any discouragement of science in the present time is greatly to be lamented, and the more especially when we see that the Germans are already taking the lead, not only in chemistry, but also in physiology. Every well-wisher of science must hope that an over-anxiety to prevent the publication of what is old will not cause the referees of our learned societies to omit what is new. However, we are not so much behindhand but that a little zeal on the part of those who have an established reputation for scientific acquirements, joined to the effect which encouragement would have on the junior members of the country, will enable the British to keep the foremost rank in science among the European nations. There are many now working zealously and ardently, for the sake of obtaining truth, struggling against the most disheartening opposition: let that opposition be changed to assistance, and great, indeed, will be the results.

"It is improper to throw the whole blame of the rejection of that paper upon Dr. Lardner, for this is by no means the only essay of importance which has been consigned to oblivion. The rejection of valuable papers is a fault of the system not of the man. At all the learned societies a paper submitted to the society is referred to persons to report upon its merits, and upon that report the committees act with regard to its publication or suppression, which, in some cases, is facetiously termed a careful deposition in the archives of the society, which expression literally means, that it is placed in some large box from which it will be excluded from the cheering influence of the sun's rays for ever. The examination into the merits of any particular paper is, however, a most unthankful, disagreeable, and troublesome office. And it is not, therefore, surprising that the referees should sometimes exercise their characters as men, in supporting their own or the opinions of their friends and those to whom they are under obligations, and occasionally forget their situation as judges. Their services being gratuitous entitle the referees to the heartiest thanks of the public; but an important office like that they occupy, in which the prosperity of the whole country is interested, should decidedly not be held without remuneration, and, when remunerated, the officers should be held responsible for their decisions. We perceive

that, had Jacobi not also been a discoverer of the electrotype, electro-metallurgy would not have added its valuable processes to the variety of arts which it comprises. Ponder this important matter, ye referees, carefully in your minds! for you never can tell to what great end a single new fact or application, though in an ill-drawn-up paper, may not ultimately tend.

"Perhaps in this place I may call the attention of scientific men to the fact that persons are actually employed by great continental powers to find out everything new that is discovered in this country, which, in a very few hours, can be conveyed to any part of Europe. This hint is thrown out, not to deter Englishmen from generously giving their discoveries to all countries, but to cause them to be cautious not to mention their processes till they have appeared in some British publication, and thus vindicate the scientific character of our own country. This is the more necessary as the English receive only the pleasure which the consciousness of being useful must afford, whilst the foreigner receives pecuniary emolument which singularly increases his desire of being acquainted with the inventions of other countries. I may further notice that the galvanoplastics of Jacobi, and the electrotype of Spencer, are not inventions the result of inductive reasoning and laborious research, like Professor Wheatstone's electro-telegraph or certain elaborate machines; but merely an application of a fact formerly known to Daniell, recorded particularly by De la Rue, and observed by hundreds of others; that both Spencer and Jacobi could work only in copper, and in no other metal; whilst, had they prosecuted their subject as a science, they would have seen that the same laws regulate the reduction of all the metals.

"Electro-metallurgy, as first made known to the world by Jacobi and Spencer, was the simplest of all inventions—the application of a fact known and recorded previously; and it forms another instance of an invention of the greatest magnitude and utility to mankind arising from most simple beginnings."

Few persons will be inclined to question the justice of Mr. Smee's preceding comments on the impolicy, to say nothing of the injustice, of condemning a scientific communication simply on account of the diction in which it is framed. Learned societies are injuriously precise in this respect; and none can be prepared to predicate even approximately the amount of damage which thus accrues to the scientific world. Many of our corporations rather suggest the idea of academies of grammar and rhetoric than as taking cognisance of inductive truths, and this unnecessary punctilio results in excluding all that valuable and highly intelligent class of practical philosophers who belong to the ranks of artisans.

Mr. Smee indicates as a peculiarity of the origin of electro-metallurgy,—understanding by this term the *galvanoplastics* of Jacobi and the *electrotype* of Spencer,—that they are not inventions the result of inductive reasoning and laborious research, like Professor Wheatstone's electric telegraph or certain elaborate machines, but merely an application of a fact formerly known to Daniell, recorded particularly by De la Rue, and observed by hundreds of others. Now, while assenting to Mr. Smee's first remark, we differ from him, *toto cælo*, in our opinion as to the discoverer of the electric telegraph; which, according to our views, cannot be attributed to Professor Wheatstone without violating the records of scientific history. Instead of illustrating the subject of electro-metallurgy by *opposition*, in thus adducing the history of the electric telegraph, we consider the instance as an illustration by *parallelism*; in other words, we hold that, after Oersted had once determined the law of magnetic deflection by the passage of a voltaic current, the electric telegraph was, *ipso facto*, discovered;—and that all which remained for Professor Wheatstone to do consisted in the application of Oersted's knowledge—an application, indeed, which seems to us far less remote from the

original fact than the application by Spencer and Jacobi of the discoveries of Daniell and De la Rue.

What is the galvanometer but an electric telegraph, acting at short distances?—and what did Wheatstone effect beyond lengthening the conducting wires, and devising a code of conventional signs? It will be remembered by many of our reader that, a few years ago, during the meeting of the British Association at Southampton, Sir J. Herschel, in a postprandial speech, designated the electric telegraph as the scum and effervescence of Oersted's great discovery. The expression gave offence—and we must own its diction to have been unfortunate—but its truth appears too indisputable for comment by any one who takes the trouble to investigate the history of the subject.

The first idea of electro-metallurgy was given by the accidental deposition of the metal copper, and copper alone was the electro-metallurgic agent of Spencer and Jacobi:—

"The next discovery," remarks the author, "which is fully equal in value to the idea of the electrotype itself, was made by Mr. Murray. He found out that non-conducting substances might have metallic copper thrown down upon them by previously applying blacklead. Mr. Murray's process is extremely simple, and absolutely perfect. The first application of this invention was made in January, 1840; but it is to be lamented that he did not further extend its application and publish his researches, for his method was communicated orally, in the conversations of the Royal Institution, and not by any paper. I lay particular stress upon the value and perfection of plumbago, because some have denied its applicability; and the reader will find, throughout the whole of the work, that I have extended the use of this substance, to the benefit of the public and to the fame of the inventor. I have made very extensive inquiries, in order to ascertain who really first used plumbago for this purpose, and I have the testimony of several authorities that it was Mr. Murray, whose claim, therefore, to this invention was rendered quite indisputable.

"Up to April, 1840, the single-cell apparatus was invariably used, but then Mr. Mason very ingeniously devised another mode by which the reduction might be effected. He used the single-cell apparatus as a Daniell's battery, which he connected with another cell to reduce another metal. In the second cell he used a copper positive electrode, which was dissolved during the action. By this means he made two metals by one pound of zinc, or, in other words, obtained two equivalents of copper for one of zinc.

"In 'The London Journal' for April, 1840, as far as I know, is contained the first specimen of printing from an electrotype by Newton. It is a small rough sketch, but as the first of the kind is peculiarly interesting.

"The laws regulating the reduction of all metals, in different states, were first given in this work, as the result of my own discoveries. By these we can throw down gold, silver, platinum, palladium, copper, iron, and almost all other metals in three states, namely, as a black powder, as a crystalline deposit, or as a flexible plate. These laws appear to me at once to raise the isolated facts known as the electrotype into a science, and to add electro-metallurgy as an auxiliary to the noble arts of this country."

Having thus succinctly and lucidly given an exposition of the history of electro-metallurgy, Mr. Smee proceeds to recapitulate the peculiarities of different batteries; and here we are led to make an observation which has been too frequently overlooked;—to the effect of pointing out the mutual reaction between new necessities and new inventions. Some fifteen years ago there were but two types of voltaic battery,—one in which the metallic discs themselves formed the lateral boundaries of the acid-holding compartments; the other in which the compartments were made of earthenware, or some other non-conducting material. At that period the voltaic battery was but rarely seen out of the laboratory. At this time this useful source of power is formed under as many aspects almost as the steam-engine

itself. These different varieties of voltaic arrangements Mr. Smee lucidly points out; and the reader desirous of making himself acquainted with the digest of all that is known on this subject cannot do better than consult the pages of the treatise before us.

Mr. Smee considers the value of the battery which bears his name to consist in its applicability to all cases; moreover, he remarks—

“When we use a single cell of the battery, the quantity of zinc dissolved to do any amount of work is the same, or even less, than attends the use of the other apparatus; because the local action in a battery of this construction is less than in the single-cell apparatus; and, lastly, the quality of the precipitated metal can be regulated with the utmost nicety; and I have no hesitation in stating that the battery process is the only one that ever can be employed by the manufacturer with advantage.

“The platinized silver battery is peculiarly suitable for the operator, for when it is in action it communicates to him the degree of work that it is doing; in fact, it completely talks to its possessor. If the current is very feeble, a faint murmur is heard; if a little stronger, the battery whispers; if a moderate current is passing, it hisses; but if a violent one, it roars. At this present moment I have nineteen batteries at work in the same room where I am writing, and they are each telling me the work they are performing. This very instant the fall of a heavy ledger in a neighbouring office has jarred two wires into contact, and the roar of that one battery has immediately informed me of the fact notwithstanding the action of the eighteen others; I have separated the wires, and the universal singing communicates to me that all are now working satisfactorily. Any local action on the zinc in the same way is immediately notified by its different and peculiar voice, and I have been surprised how quickly the experimenter catches the characteristic peculiarity of each noise, which is learnt more readily than the sound of different bells in a strange house.

“With regard to the constancy of this battery I may be expected to say a few words; for, although theoretically it is not absolutely constant, yet, practically, for the purposes of the electro-metallurgist, its constancy remains for two or three days, or, in other words, until the battery is nearly exhausted; and then to replenish the solution of zinc with a fresh supply of dilute acid will not occupy more than half a minute. In recording my own experience of its practical, though not of its absolute, constancy, I can at the same time conjoin the testimony of some of the most extensive manufacturers in this country. By the practical manufacturer this instrument is recharged with acid, at intervals, varying from three days to a fortnight, or even a twelvemonth, according to the size of the vessel containing the acid. Whilst upon the use of the battery I may state, that the platinum, with proper care, never wears off the silver, and that the platinized silver never undergoes the slightest change, or is affected by the slightest local action.”

With regard to Professor Daniell's constant battery, Mr. Smee remarks that its principal disadvantages are, first—

“The labour required to set it in action; secondly, the trouble and expense attending the use of the porous tubes; and further, the necessity of continually re-amalgamating the plates; and, lastly, the small quantity of fluid which the porous pots contain to dissolve the sulphate of zinc.

“The essential advantage which this excellent battery possessed over all which preceded it is the removal of the hydrogen, whilst in the nascent state, by its decomposing the sulphate of copper, instead of its evolution at the negative vessel. It is owing to this, also, that this battery gives off no fumes. To employ its decomposing effects on acidulated water, with platinum poles, with the greatest advantage, a series of ten or twelve is required.

“Another battery, upon precisely the same principles, although applied in a very different way, was invented by Mr. Grove. He uses for his negative metal platinum, and in the inner porous cells he puts strong nitric acid, and in

the outer vessel, with the zinc, dilute sulphuric or muriatic acid. The form which Mr. Grove prefers is a many-celled trough, like the Wollaston's, with flat paralleloiped porous tubes in the interior; and, as platinum is an expensive metal, he takes care that the whole surface is brought into full operation, by completely surrounding it with zinc. In this battery the nitric acid is decomposed by the hydrogen, and deutoxide of nitrogen is evolved; which, coming in contact with the atmospheric air, is converted into nitrous acid.

“This battery is remarkable for the intensity of its power; a series of four being sufficient for most decompositions. A large series exhibits the arc of light in a very brilliant manner; for showing this phenomenon it exceeds all other batteries. This battery, however, with its great intensity, is not without some serious disadvantages; for the nitrous fumes which are evolved during its action are extremely pernicious to the animal economy, so much so that it is highly dangerous to be exposed to them without a free access of air. Many cases have come before myself of injury to the lungs, and even constitutional effects, from exposure to nitrous fumes; and, therefore, in using this excellent battery due precautions should be taken. These nitrous fumes will attack almost every metallic surface with which they come in contact, and therefore it should not be employed in a room where there are polished stoves or metallic apparatus. The nitrous acid moreover passes through the porous tubes, and attacks the zinc to a considerable extent, independently of that zinc which is dissolved to generate electricity; and lastly, this battery has the objection of requiring porous tubes.

“We have thus seen that Mr. Grove's intense battery is, in its principle, similar to that proposed by Professor Daniell, for in both the hydrogen is removed by chemical means; in the first instance by nitric acid, and in the second by sulphate of copper. It possesses a great advantage by having one of the best fluid conductors we are acquainted with; for the nitrous acid formed during the action of the battery has been found by Dr. Faraday to possess this valuable property in a most eminent degree. It is a curious fact that the use of nitric acid had long been known; for in all the old forms of batteries a certain proportion of this acid was employed in the charge. Of course there are many other modes by which the same results may be obtained; as, for instance, by using nitrate of silver, or the salts of gold, palladium, and platinum, or by other oxygenated acids, as the iodic, chloric, and bromic. I have tried many other substances upon this principle, but have not arrived at any new result, nor have found any arrangement superior for its power to the nitric acid battery.”

This general outline of voltaic batteries being given, Mr. Smee concludes that part of his subject by the following recapitulation:—

“Such is a brief view of the three batteries now in use: Professor Daniell's excellent invention being distinguished by its constancy; Mr. Grove's powerful battery by its intensity; and my own by the cheapness with which the quantity of electricity may be developed, and by its simplicity. Neither of these can be regarded as a perfect galvanic battery, for each wants some of the properties of the others; it is to be hoped, therefore, that every attention will be given to the further improvement of these valuable instruments, until the good properties of each are combined in one. Which of the three is at present to be preferred must depend upon the purpose for which it is required; and the choice must of course be left to the operator. For my own part it affords me much pleasure to see that the platinized silver battery has fully answered the expectations which I formed of it; or even, I may say, in its extensive application very far exceeded it, as the amount of work already actually performed by this instrument is much greater than the total amount done by all other batteries ever since their first invention. By some it has been too much extolled, by others too much blamed. Notwithstanding the misstatements on both sides, it has fully stood the test of time, and has been

employed by the public in a manner which I had not even hoped. The reason they prefer it for general and especially for heavy manufacturing purposes appears to be, that it does not require the use of porous tubes, nor of the strong acids, and that it does not give off poisonous fumes. It usually continues in active operation for six, eight, ten, or more days, when a sufficiency of acid is supplied to it. The zinc, as a rule, demands but one amalgamation after that operation has been thoroughly effected; and the time required either for setting it in action or for maintaining its operation is comparatively not worth a thought; and, lastly, the expense of working it is reduced to the lowest possible amount, being exactly proportionate to the power obtained. With regard to the choice of the battery, it appears to me that he must be a clumsy operator who obtains the galvanic principle and cannot apply it; therefore the whole subject under consideration may be summed up by ascertaining with what battery the greatest amount of galvanic fluid can be obtained at the smallest cost, the least labour, and the greatest convenience. These three batteries agree by being each excited by the action of zinc upon water, the formation of oxide of zinc, and its subsequent removal by the sulphuric acid forming a sulphate of zinc; now, as this same salt is formed in each battery, the same quantity of water to dissolve the sulphate of zinc will be required to produce any amount of work, and therefore, whether Grove's, Daniell's, or my own battery be employed, the same-sized vessel must be employed; proving the fallacy of attempting to obtain a battery in a small compass where sulphate of zinc is formed. In Grove's and Daniell's battery, however, if the diaphragm be of a nature that precludes the free passage of the zinc to the side of the platinum or copper, then will the amount of action depend upon the capacity of the vessel in which the zinc is immediately placed, and in that case a much larger vessel will be required for theirs than for mine.

"Perhaps I may be expected to give an approximation to the relative cost of working the three batteries. In mine it is the cost of the zinc dissolved by the acid: zinc + acid + a local action. In the constant battery it is zinc + acid + sulphate of copper + much local action. Each cell of this, to do any given amount of work, would cost about twice as much as mine. In Grove's battery it is zinc + acid + nitric acid reduced by the hydrogen + nitric acid combined with ammonia formed during the action of the battery + extensive waste of the zinc = about three times as much as mine.

"The construction of all the various forms of galvanic batteries has now been considered, and the principles also on which the peculiarities of each are founded have been briefly explained; though, if this important branch of our subject were to be alone discussed at a length proportionate to its value, this volume would not be sufficient for the interesting and important matter relating to it."

(To be continued.)

PHARMACOPŒIA OF THE UNITED STATES*.

In the concluding remarks of our last week's review of the United States Pharmacopœia we pledged ourselves to resume the subject by a comparison of certain leading processes therein, followed with others enjoined by the Pharmacopœias of Great Britain and Ireland.

As a commencement, we present our readers with the American process of making disulphate of quina, which is called by our brethren simply *sulphate*, and our designation quina is termed by them *quina*. To the latter orthography we have no right to object, seeing that no authority exists for one more than the other; as to the former, we would remark that the term sulphate of quina is sufficiently correct for all pharmaceutical purposes, as no other sulphate of the same alkali is used in medicine.

"QUININE SULPHAS.—SULPHATE OF QUINIA.—Take of yellow bark, in coarse powder, 4 lbs.; muriatic acid, 3 fluid oz.; lime, in powder, 5 oz.; water, 5 galls.; sulphuric acid, alcohol, animal charcoal, each, a sufficient quantity.

"Boil the bark in one-third of the water, mixed with one-third of the muriatic acid, and strain through linen. Boil the residue twice successively with the same quantity of water and acid as before, and strain. Mix the decoctions, and, while the liquor is hot, gradually add the lime, previously mixed with two pints of water, stirring constantly, until the quinia is completely precipitated. Wash the precipitate with distilled water, and, having pressed, dried, and powdered it, digest it in boiling alcohol. Pour off the liquor, and repeat the digestion several times until the alcohol is no longer rendered bitter. Mix the liquors, and distil off the alcohol until a brown viscid mass remains. Upon this substance, removed from the vessel, pour about half a gallon of distilled water, and, having heated the mixture to the boiling point, add as much sulphuric acid as may be necessary to dissolve the impure alkali. Then add an ounce and a half of animal charcoal, boil for two minutes, filter the liquor while hot, and set it aside to crystallize. Should the liquor, before filtration, be entirely neutral, acidulate it very slightly with sulphuric acid; should it, on the contrary, change the colour of litmus paper to a bright red, add more animal charcoal. Separate the crystals from the liquor, dissolve them in boiling water slightly acidulated with sulphuric acid, add a little animal charcoal, filter, and set aside to crystallize. Wrap the crystals in bibulous paper, and dry them with a gentle heat.

"The mother waters may be made to yield an additional quantity of sulphate of quinia by precipitating the quinia with solution of ammonia, and treating the precipitated alkali with distilled water, sulphuric acid, and animal charcoal as before.

"Sulphate of quinia is in white, silky, very light crystals, which are entirely dissolved by about 740 parts of cold and 30 of boiling water, are very readily soluble in alcohol and in water acidulated with sulphuric acid, and are insoluble in ether. The aqueous solution, upon the addition first of chlorine and afterwards of ammonia, assumes a green colour. By a moderate heat, the crystals lose from eight to ten per cent. of water of crystallization, and at a red heat are wholly dissipated."

Such is the American process, the main peculiarity of which consists in employing muriatic acid as a solvent for the kinate of quina existing in cinchona bark instead of dilute sulphuric acid, specified in the former edition of the London Pharmacopœia, and still recommended by the Colleges of Edinburgh and Dublin.

This subsequent precipitation of the quina from its muriatic acid solution by the addition of lime strikes us as being an exceedingly neat, and we have no doubt efficacious, process. It will be hardly necessary for us to indicate that the present London Pharmacopœia gives no directions for the production of disulphate of quina, on account of the purity with which this substance is obtained in commerce.

The peculiarity of the Edinburgh process consists in commencing the operation of disulphate of quina manufacture by boiling the bark with carbonate of soda, by which the colouring matter, and the resin of the bark, some extractive, and the kinic acid are removed; thus leaving the quina in an insoluble form behind. The bark, after this preliminary treatment, is boiled with dilute sulphuric acid, which, dissolving the quina, forms a solution of disulphate of that alkali, to which carbonate of soda is again added, when sulphate of soda is produced and quina again thrown down, which being once more dissolved in sulphuric acid, and evaporated, yields crystals of pure di-sulphate of quina on cooling.

In the preparation of strychnia the editors of the American Pharmacopœia again take advantage of the solvent properties of muriatic acid. The process is as follows:—

* The Pharmacopœia of the United States of America. By the Authority of the National Medical Convention, held at Washington, A.D. 1850. Philadelphia: Lippincott, Grambo, and Co., successors to Grigg, Elliot, and Co., 1851.

"**STRYCHNIA.**—Take of nux vomica, rasped, 4 lbs.; lime, in powder, 6 oz.; muriatic acid, 3 fluid oz.; alcohol, diluted sulphuric acid, solution of ammonia, purified animal charcoal, water, each, a sufficient quantity.

"Digest the nux vomica in two gallons of water, acidulated with a fluid ounce of the muriatic acid, for twenty-four hours; then boil for two hours, and strain with expression through a strong linen bag. Boil the residuum twice successively in the same quantity of acidulated water, each time straining as before. Mix the decoctions and evaporate to the consistence of thin syrup; then add the lime previously mixed with a pint of water, and boil for ten minutes, frequently stirring. Pour the mixture into a double linen bag, and, having washed the precipitate well with water, press, dry, and powder it. Treat the powder repeatedly with boiling alcohol, until deprived of its bitterness; mix the liquors; and distil off the alcohol by means of a water bath. Mix the residue with water, and, having applied heat, drop in sufficient diluted sulphuric acid to neutralize and dissolve the strychnia; then add purified animal charcoal, boil for a few minutes, filter, evaporate, and crystallize. Dissolve the crystals in water, and add sufficient solution of ammonia to precipitate the strychnia. Lastly, dry the precipitate on bibulous paper."

The preparation of this alkali, as well as of quina, the London Pharmacopœia has abandoned. The Dublin Pharmacopœia proceeds by employing dilute sulphuric acid as the solvent of igasurate of strychnia existing in the nux vomica, instead of muriatic acid as employed by the Americans. The Edinburgh Pharmacopœia directs the primary solution of igasurate of strychnia to be made by digestion with water. This plan strikes us as being less efficient than either of the preceding.

In our next number we will present our readers with some other peculiarities in the Pharmacopœia of the United States; meantime we again recommend the treatise to their attention.

(To be continued.)

PORTRAIT OF J. C. ADAMS, THE DISCOVERER OF NEPTUNE.

Before us lies an engraving, by Samuel Cousins,* from a picture by Mogford, of this highly-distinguished mathematician—and personal acquaintance with the original enables us to bear testimony to the extreme fidelity with which both painter and engraver have embodied in their productions the features, character, and expression of a philosopher of whom the nation is so justly proud. The engraving is in that peculiar style of mixed mezzotint for which Cousins is so celebrated, and of which he may be said to be the inventor. Those of our readers who delight in lineaments of celebrated men cannot do better than spend their guinea and add the likeness of Adams to their collection.

SPECIFICATIONS OF CHEMICAL PATENTS.

Herbert Taylor, late of Cross-street, Finsbury, but now of Mark-lane, city of London, merchant, for certain improvements in the manufacture of carbonates and oxides of barytes and strontia, sulphur, and sulphuric acid, from the sulphates of barytes and strontia; and for consequent improvements in the manufacture of carbonates and oxides of soda and potassa. Date of patent, March 15. Date of enrolment, September 1. (Communication.)

The patentee's improvements consist in the manufacture of carbonates and oxides of baryta and strontia, sulphur, and sulphuric acid, and the carbonates and oxides of soda and potash, and are thus performed:—To produce carbonate of baryta or strontia, and sulphur or sulphuric acid, the

patentee converts the sulphate of baryta or strontia into a sulphuret of either of these bases, by heating it in a suitable vessel or furnace in contact with carbon or a carbonaceous substance, only exposing it to the action of a current of incandescent carbonic oxide; through the sulphuret thus produced, diffused through water, or, what is preferable, through a clear solution of the sulphuret freed from all insoluble particles, and placed in any suitable closed vessel, he passes a current of carbonic acid gas, by which means a carbonate of baryta or strontia is formed, which precipitates to the bottom of the vessel, whilst sulphuretted hydrogen gas passes off. This sulphuretted hydrogen is mixed with only as much atmospheric air as will suffice by means of its oxygen to form water with the hydrogen of the gas, and the mixture is thus ignited, the usual precautions to prevent explosion being taken; or the sulphuretted hydrogen may be mixed with nitreous vapours and excess of air; in each case sulphur is deposited on the vapour being passed through suitable chambers or vessels.

To obtain sulphuric acid a mixture of sulphuretted hydrogen with an excess of atmospheric air is ignited, sulphuric acid gas is formed, which, being conducted into ordinary sulphuric acid chambers, contributes to the formation of that acid. In either of these cases, as soon as the decomposition of the sulphuret is effected, and all evolution of the sulphuretted hydrogen has ceased (which may be ascertained by means of the ordinary lead test), the liquor is drawn off, and the carbonate of baryta or strontia removed.

To form the oxides of baryta or strontia the patentee submits the carbonate produced as above mentioned to the intense heat of a furnace, by which means the whole of the carbonic acid is driven off. This process is much better accomplished with the aid of a jet of steam made to act in the heated carbonate, in which case an hydrated oxide is formed. Another method of obtaining the oxides of baryta and strontia is by boiling a concentrated solution of the sulphuret of these earths, which solution, when cool, will deposit crystals of hydrated oxide, leaving a hydrosulphated sulphuret in solution, which, if heated in closed vessels, after the removal of the crystals of the oxide, will furnish sulphuretted hydrogen for the production of sulphur and sulphuric acid as before mentioned, when a simple sulphuret will remain, from which, by continued treatment, all the sulphur and oxide which it contains may be removed. The crystals of hydrated oxide of baryta or strontia thus obtained may be purified by washing or recrystallization, and may also be converted into carbonate if required, by exposing the moist crystals to the action of a current of carbonic acid in suitable closed vessels, or by passing a current of carbonic acid through their aqueous solution.

To obtain the carbonate of soda or potash the patentee adds to a solution of sulphate of soda or potash at ordinary temperatures a sufficient quantity of carbonate of baryta; mutual decomposition ensues, with the formation of sulphate of baryta, and carbonate of soda or potash; this process is accelerated by combining with it the employment of a current of carbonic acid gas. Sulphate of strontia may also be employed, but with the addition of carbonic acid gas, as no decomposition will take place without it. The solution of carbonate of soda or potash thus obtained may be either crystallized or evaporated to dryness in the usual way. The hydrated oxides of soda and potash may also be obtained; for this purpose the patentee takes the hydrated oxide of baryta or strontia, the latter preferable, as being more readily reducible from the carbonate, slakes it with water to the consistence of a thin paste, and adds it to a solution of sulphate of soda or potash. Sulphate of baryta or strontia precipitates, and solution of hydrated oxide or caustic soda or potash remains in solution, which may be either used in this state, or be evaporated to dryness, or otherwise treated.

The patentee claims:—Firstly, the combined process of manufacturing sulphur or sulphuric acid, the carbonates of baryta and strontia, and their oxides from the sulphates of the same base by the method above described.

Secondly, the manufacturing carbonate of baryta and strontia, and their oxides, from the sulphate of these bases, by the process above described.

* Published by Hogarth.

Thirdly, the production of sulphur or sulphuric acid from sulphate of baryta or strontia as above described.

Fourthly, the manufacture or improvements in the process of producing the carbonates of soda or potash by treating or decomposing the sulphate of these bases by the carbonate of baryta or strontia, employing in aid thereof a sufficient quantity of carbonic acid as above described; the use of carbonic acid in conjunction with baryta being optional, but imperative in the cases in which strontia is employed.

The patentee in conclusion states that he does not claim the manufacture of the oxides of baryta and strontia by the calcination of the carbonates of those earths, if the carbonates whence they are manufactured are obtained in any other way than that above described.

Victor Hyacinthe Libert Guillonet, of Condé sur Noiret, Calvados, in the Republic of France, chemist, for certain processes for increasing on manufactured fabrics the several shades of indigo. Date of patent, March 10. Date of enrolment, September 9.

This patentee's invention consists in subjecting textile fabrics dyed with indigo to an elevated temperature, combined with steam pressure. The fabric is first dyed with indigo in the usual way, and the object sought by the patentee is to combine more fully the chemical molecules of the indigo with the fibre of the textile fabric, modifying, at the same time, the primitive arrangement of its molecules, and by this means increasing the tone of shade, and enabling it to reflect the violet blue ray.

For this purpose the patentee employs a metallic vessel capable of standing the pressure employed. This vessel may be of any form or shape, and the pressure of steam employed equal to six atmospheres or more. This apparatus is furnished with a safety-valve, with a pipe for the introduction of steam, and another for the passing off the condensed vapour. A frame of wood is placed inside the apparatus, about eight inches from the bottom, and on this frame the fabrics to be treated are laid, a blanket being placed round them, to prevent their coming into contact with the sides of the vessel, and to absorb the first portions of steam injected. The apparatus is then closed, and steam introduced by a tap into the pipes placed under the frame, these pipes being furnished with very minute holes, in order to distribute the steam as equally as possible. After exposure to this steaming operation for from twenty to twenty-five minutes, the process is finished, the apparatus is then opened, and the fabrics immediately folded up. The process is applicable to all kinds of fabrics dyed with indigo. The patentee states that the chemical action between the molecules of the indigo and the fibre of the tissue gives rise to their more intimate union, whilst the physical effect produced is to give greater thickness to the fabric, as well as much additional softness.

The patentee claims:—The subjecting textile fabrics dyed with indigo to the action of an elevated temperature, and of steam pressure, for increasing the shade of indigo on the said fabrics, as before described.

Charles Cowper, of Southampton-buildings, Chancery-lane, for improvements in moulds for electro-metallurgy. Date of patent, Feb. 17. Date of enrolment, August 16.

The patentee's invention consists of an improved method of forming moulds of elastic or glutinous materials, whereby they are rendered better conductors of electricity. The substances employed by the patentee are glue and gelatine; gutta percha, caoutchouc, or other elastic or glutinous substance, may also be used. In those cases in which gelatine or glue is used, the model, its surface having been well oiled, is placed in a case or box; its surface is then covered with fine wires, or strips of metal, the ends of which are allowed to project slightly; the melted gelatine or glue is next poured into the case and allowed to remain until cold. The surface of the mould thus obtained, containing the fine wires placed on the model, is next coated with bronze powder, plumbago, metallic film, or other conducting material, the other side of the mould being covered with varnish or grease, for the purpose of protecting it from the action of the solution in which it is to be immersed. One pole of the voltaic

battery or electro-magnetic machine employed is then connected with the projecting ends of the fine wires on the face of the mould, which is then placed in the depositing vessel in which the metallic solution is placed; a piece of metal being at the same time attached to the other pole of the battery or machine. Or the mould may be placed in connection with a piece of zinc, and put into the apparatus known as the single-cell battery.

By this arrangement such is the effective distribution of electricity over the entire surface of the mould that the deposit of metal from the solution commences simultaneously on every part of the surface, which is thus rapidly covered, before any injurious action can take place on the gelatine by the metallic solution employed.

A deposit of sufficient thickness having thus been obtained, the mould is removed from the depositing vessel, and separated from the deposit by pulling it off or dissolving it. In cases in which gutta percha is employed for forming the mould it is first softened by heat, and then raised with about one-sixth part of its weight of coal naphtha, or other solvent, in order to render it more plastic and flexible.

The surface of the model having been oiled and covered with a series of metallic wires, as in the case before mentioned, a sheet of the gutta percha prepared as above directed and softened by heat, is pressed in close contact with the model and allowed to cool. The gutta percha mould thus obtained is treated in the same way as the gelatine mould above mentioned, and, if the metallic solution employed be capable of acting on gutta percha, that part of the mould not coated with a conducting substance must be protected by a covering of varnish or grease.

In forming moulds of caoutchouc, this substance must be softened by the addition of naphtha, bisulphuret of carbon, or other solvent, and applied as in the case of gutta percha. A thick solution of either caoutchouc or gutta percha may also be employed to obtain moulds; in this case successive coatings of the solution are to be applied to the model, each coating being allowed to dry before another is added, until a sufficient thickness has been obtained. The patentee states that both gutta percha and caoutchouc are more particularly applicable for obtaining moulds from metallic models, but are also capable of application to other models, though glue and gelatine are preferable. The addition of a small quantity of sugar or treacle to the gelatine or glue has the property of retarding the drying and preventing the hardening of the material. The patentee claims:—The formation of moulds for electro-metallurgy, by covering the model with metallic wires, strips, or pieces, and the application of gelatine or other elastic or glutinous substances, to form the mould, in such manner that the wires or other metallic substance may remain embedded in its surface, and be adapted for conducting the electric current to the surface of the mould, as described.

POMMADE DE NINON DE L'ENGLIS, BY BOYER.—Take oil of sweet almonds, 4 oz., washed lard, 3 oz., rose water, 3 oz. This pomade is extremely mild and refreshing.

TOPIQUE LABIAL OF MADAME DELACOUR (FOR THE LIPS).—This celebrated composition, it is said, renders the lips soft, prevents them from chapping, and preserves them fresh and healthy against the effect of cold. It is very astringent, and consequently should not be used if the lips are at all inflamed. Either of these recipes afford a good result. 1st Composition: Oak galls, 1 dr., pomegranate, 1 dr., myrtle leaves, 1 dr., sumac, 1 dr., sulphate of zinc, 1 dr., rose salve, 4 oz., wax, 1 oz., spermaceti, 1 oz., oil of sweet almonds, 1 oz., lait virginal, 2 drs., Mecca balsam, 12 drops. 2nd Composition: Oak galls, 2 drs., cyprus nuts, 2 drs., pomegranate rind, 2 drs., myrtle leaves, 3 drs., white wax, 1 oz., sumac, 3 oz., oil of sweet almonds, 1 oz., lait virginal, 1 dr., spermaceti, 3 oz., sulphate of zinc, 1 dr., Mecca balsam, 1 dr. 3rd Composition: Instead of white wax, spermaceti, and oil of almonds, take extract of marshmallow root, extract of flowers mallow, extract of violet flowers, extract of rose. Perfume in each case with some drops of an essential oil.

PRICE CURRENT OF DRUGS, &c.

Articles having bd. or bond annexed are sold at short price exclusive of duty; when no duty is affixed the article is free. Add 6 per cent. to the duty on all articles excepting those having an asterisk prefixed. F. means foreign; B.P. British possessions.

DRUGS, &c.		Price.	
		£. s. d.	£. s. d.
ALKANET ROOT ..	..cwt.	1 14 6	2 10 0
ALOE, Barbadoes ..	..cwt.	1 10 0	6 0 0
Hepatica ..	..	1 10 0	5 0 0
Cape ..	..	1 5 0	1 15 0
ALUM, British ..	..ton	7 10 0	8 5 0
Roeh ..	..cwt.	1 0 0	1 4 0
AMBERGRIS, Grey ..	..oz	4 8 0	7 0 0
ANCHOVIES ..	..dble. brl.	17 0 0	18 0 0
ANGELICA ROOT ..	..cwt.	1 0 0	1 5 0
ANNATTO, Flag ..	..lb.	1 0 0	1 2 0
Roll ..	..	0 10 0	1 0 0
ANTIMONY, Crude ..	..cwt.	1 8 0	0 0 0
Ore ..	..ton.	13 0 0	0 0 0
Regulus Cps.	..cwt.	2 4 0	3 0 0
Rowls ..	..	2 15 0	2 13 0
ARROW ROOT ..	..lb.	0 3 0	1 0 0
ARSENIC, White ..	..cwt.	17 0 0	18 0 0
Red ..	..	0 0 0	0 0 0
English White ..	..	12 6 0	1 0 0
Yellow ..	..	19 0 0	1 0 0
ARGOL, Bologna ..	..cwt.	2 0 0	2 12 0
Florence White ..	..	2 0 0	2 4 0
Red ..	..	2 0 0	2 5 0
Naples White ..	..	1 18 0	2 5 0
Red ..	..	1 12 0	1 13 0
Sicily White ..	..	1 8 0	1 16 0
Red ..	..	1 8 0	1 10 0
French ..	..	1 14 0	2 7 0
Cape ..	..	1 15 0	2 11 0
ASPHALTUM, Egyptian ..	..	2 10 0	4 15 0
BORACIC ACID ..	..cwt.	2 12 0	2 13 0
BALSAM, Canada ..	..lb.	0 9 0	0 10 0
Capavi ..	..	0 10 0	1 2 0
Peru ..	..	5 0 0	5 2 0
Tolu ..	..	3 6 0	4 0 0
BARILLA, Spanish ..	..ton	0 0 0	0 0 0
Teneriffe ..	..	0 0 0	0 0 0
Sicily ..	..	0 0 0	0 0 0
East India ..	..	0 0 0	0 0 0
BARK, Peruvian, pale ..	..lb.	1 6 0	2 6 0
Good ..	..	0 0 0	2 0 0
Mid., do. ..	..	1 1 0	1 2 0
Crown ..	..	1 3 0	2 2 0
Yellow, Flat ..	..	3 0 0	4 4 0
Quill ..	..	2 0 0	6 0 0
Red, Flat ..	..	7 0 0	0 0 0
Quill ..	..	3 0 0	4 6 0
Cascarilla ..	..cwt.	1 0 0	1 15 0
Quercitron ..	..	8 6 0	9 6 0
Oak, English.....per load	..	13 0 0	14 0 0
Foreign.....per ton.	..	3 0 0	6 5 0
New S. W.	..	5 0 0	8 0 0
BERRIES, Bay ..	..cwt.	19 6 0	1 6 0
Juniper, Italian ..	..	7 6 0	8 0 0
German ..	..	8 0 0	12 0 0
Turkey, Yellow ..	..	3 15 0	6 0 0
Persian, do. ..	..	8 0 0	14 0 0
BLACK LEAD, E. I.	..cwt.	5 0 0	16 0 0
Malaga ..	..	10 0 0	1 5 0
German ..	..	1 0 0	1 3 0
Dust ..	..	9 0 0	12 0 0
BORAX OR TINCAL ..	..cwt.	2 0 0	0 0 0
E. I. Refined ..	..	2 17 0	2 18 0
English Refined ..	..	3 10 0	3 13 0
BRIMSTONE, Rough ..	..ton	9 0 0	9 5 0
Roll ..	..	12 0 0	0 0 0
CAMPHOR, Unrefined ..	..cwt.	3 7 6	0 0 0
Dutch ..	..	3 10 0	0 0 0
* Refined ..	..lb.	1 0 0	1 1 0
CANTHARIDES, bd.	..	3 0 0	3 6 0
CAPERS, French ..	..cwt.	7 0 0	12 0 0
Capotts ..	..	6 0 0	7 10 0
CARDAMOMS, Malabar ..	..lb.	3 6 0	8 0 0
Long Longs ..	..	3 0 0	3 4 0
Ceylon ..	..	1 4 0	1 5 0
CASTOR OIL, America ..	..lb.	0 0 0	0 0 0
E. I., bd.	..	0 2 0	0 5 0
CHILIES, E. I.	..cwt.	15 6 0	1 5 0
CHINA ROOT ..	..cwt.	10 0 0	1 0 6
COCHINEAL, ..	..	..	..
Honduras Black ..	..lb.	3 7 0	4 10 0
Silver ..	..	2 1 0	3 9 0
Mexican Black ..	..	3 2 0	3 9 0
Silver ..	..	2 11 0	3 4 0
COBALT ..	..lb.	0 0 0	0 0 0
COCCULUS INDICUS ..	..cwt.	1 0 0	1 6 6

F. 2d. per lb.

B. P. 6d. F. 2s.

5s. per cwt.

3d. per lb.

3d. .. B.P.

6d. per lb.

DRUGS, &c., continued.

		Price.	
		£. s. d.	£. s. d.
COFFEE, Jamaica, triage and ord.	..	1 13 0	1 18 0
good and fine ord.	..	2 0 0	2 6 0
low to good middling	..	2 8 0	3 10 0
fine middling & fine	..	3 12 0	4 10 0
Demerara, triage & ord.	..	0 0 0	0 0 0
good and fine ord.	..	0 0 0	0 0 0
low to good mid.	..	0 0 0	0 0 0
Berbice, triage and ord.	..	0 0 0	0 0 0
good and fine ord.	..	0 0 0	0 0 0
low to fine middling	..	0 0 0	0 0 0
Dominica and St. Lucia.	..	0 0 0	0 0 0
triage and ordinary	..	0 0 0	0 0 0
good and fine ord.	..	0 0 0	0 0 0
low to good middling	..	0 0 0	0 0 0
Ceylon, ordinary to very	..	..	..
good ord. native	..	1 18 6	2 0 0
fine ord. to mid. plu.	..	2 4 0	3 14 0
good mid. to fine do.	..	2 16 0	3 15 0
Mocha, ord. & ungarbled	..	2 0 0	2 10 0
clean garbled ..	..	3 6 0	3 15 0
fine ..	..	3 16 0	4 8 0
Sumatra, Padang, &c.	..	1 17 0	2 0 0
Java ..	..	2 4 0	3 0 0
Mysoore with certificate	..	1 19 0	2 10 0
Brasil, ord. to fine ord.	..	1 15 0	1 18 0
ex. fine plant. kind	..	2 0 0	2 15 0
St. Domingo ..	..	1 18 0	1 19 0
Havannah, ord. to g. ord.	..	1 18 0	2 0 0
fine ord. to mid.	..	2 2 0	2 10 0
Cuba, ord. to good ord.	..	1 18 0	2 2 0
fine ord. to middling	..	2 4 0	2 15 0
Porto Rico ..	..	1 18 0	2 10 0
La Guayra ..	..	1 18 0	2 12 0
Costa Rica ..	..	2 0 0	2 12 0
COCOA, Trinidad, red ..	..	2 3 0	2 14 0
grey ..	..	1 16 0	2 2 0
Grenada ..	..	1 15 0	2 3 0
Para, St. Domingo, and Bahia	..	1 7 0	1 9 0
Guayaquil ..	..	0 0 0	1 11 0
COLOCYNT, Turkey ..	..lb.	0 6 0	1 9 0
Spanish ..	..	0 11 0	1 6 0
COLOMBO ROOT ..	..	2 16 0	2 19 0
COPPERAS, Green, bc.	..ton	10 0 0	2 15 0
Blue ..	..	1 8 0	1 10 0
CREAM TARTAR, French ..	..	2 18 0	3 8 0
Venetian ..	..	3 5 0	3 8 0
CUBES ..	..cwt.	4 10 0	5 0 0
CUTOH ..	..	19 0 0	0 0 0
DRAGON'S BLOOD ..	..lump	2 10 0	9 15 0
Reed ..	..	8 0 0	14 10 0
DYEWOODS: ..	..	..	..
Brasil ..	..ton	45 0 0	80 0 0
Barwood, Angola ..	..	0 0 0	0 0 0
Camwood ..	..	13 15 0	28 15 0
Fustic, Brasil ..	..	0 0 0	0 0 0
Cuba ..	..	8 10 0	9 0 0
Jamaica ..	..	4 0 0	5 10 0
Spanish ..	..	4 0 0	4 10 0
Zante ..	..	0 0 0	0 0 0
Logwood, Campeachy ..	..	6 10 0	6 15 0
Honduras ..	..	5 0 0	5 10 0
Jamaica ..	..	3 10 0	4 0 0
St. Domingo ..	..	4 0 0	5 0 0
Nicaragua, Lima ..	..	14 0 0	15 0 0
solid ..	..	12 0 0	17 0 0
small and mid.	..	6 10 0	12 0 0
Red Sanders ..	..ton	4 15 0	5 10 0
* ESSENTIAL OILS ..	..	..	..
Cloves, bd.	..lb.	2 8 0	5 4 0
Caraway ..	..	6 3 0	5 4 0
Lavender ..	..	3 6 0	7 0 0
Peppermint, bd.	..	4 0 0	11 0 0
Spike ..	..	4 0 0	0 0 0
Aniseed, bd.	..lb.	5 5 0	5 6 0
Cassia, bd.	..	9 6 0	10 0 0
Cayaput, bd.	..oz.	0 33 0	0 44 0
Cinnamon, bd.	..	0 9 0	2 6 0
Mace (expd.), bd.	..	0 24 0	0 4 0
Nutmegs, bd.	..	0 4 0	0 54 0
Bergamot ..	..lb.	9 0 0	9 9 0
Lemon ..	..	7 6 0	8 3 0
Orange ..	..	6 9 0	7 0 0
Rosemary ..	..	1 8 0	2 6 0
Thyme ..	..	2 9 0	3 9 0
Otto Roses ..	..oz.	13 6 0	1 0 0
Almonds ..	..lb.	1 5 0	0 0 0
GALANGAL ROOT, bd.	..cwt.	14 0 0	1 4 0
GALLS, sorts ..	..cwt.	3 0 0	3 15 0
Green or White ..	..	2 15 0	3 7 0
Blue ..	..	4 12 0	4 15 0
E. I. Blue ..	..bd.	3 10 0	5 0 0
GENTIAN ROOT ..	..cwt.	1 1 0	1 2 0
GLUE, Best Town ..	..cwt.	1 5 0	1 0 0
Interior ..	..	0 0 0	0 0 0
Foreign ..	..	1 10 0	2 5 0
GUINSA BRAINS, bd.	..	2 0 0	2 5 0

per lb.

B.P. 1d. F. 2 per lb.

s. per lb

ls. per lb.

5s. per cwt.

DRUGS, &c. continued.

DRUGS, &c., continued.		Price.		DRUGS, &c., continued.		Price.	
		£. s. d.	£. s. d.			£. s. d.	£. s. d.
GUTTA SERENA lb.		0 9 0	1 0 0	IRON, British Bars		5 2 6	5 10 0
GUMS:				Rods		6 5 0	6 15 0
Ammoniac, Lp. .. .cwt.		9 6 0	1 10 0	Hoops		7 0 0	7 10 0
Drop		1 15 0	3 15 0	Sheet		7 15 0	8 5 0
Arabic, E. I.		1 0 0	4 12 0	Cargo in Wales Bars		4 10 0	4 0 0
Cape		12 0 0	1 2 0	Plgs No. 1 Wales		3 0 0	4 0 0
Turkey, fine		8 10 0	10 0 0	No. 1 Clyde		1 19 6	2 0 0
2nds and 3rds		3 5 0	6 0 0	Russian C.C.N.D.		0 0 0	0 0 0
Australian		1 17 0	2 0 0	P.S.I.		0 0 0	0 0 0
Barbary, Brown		1 15 0	2 10 0	Archangel		0 0 0	0 0 0
White		3 5 0	2 15 0	Swedish		11 10 0	12 10 0
Gedda		5 0 0	6 0 0	LEAD, British:			
ANIMI, washed		5 0 0	12 0 0	Pigs	ton	16 10 0	18 5 0
scraped		6 0 0	12 12 6	Sheet milled		18 0 0	20 10 0
Copal lb.		0 6 0	2 8	Shot Pat.		19 10 0	20 10 0
ASAFETIDA .. .cwt.		10 0 0	4 10 0	Red or Minimum		18 10 0	19 0 0
BENJAMIN, 3rds		4 0 0	9 10 0	White		22 0 0	25 0 0
1st and 2nds		10 0 0	35 0 0	Litharge		19 0 0	0 0 0
DAMMAR		1 10 0	1 18 0	Pig Spanish		0 0 0	0 0 0
GAMBOGE		5 0 0	11 12 6	American		0 0 0	0 0 0
GALBANUM		2 10 0	3 0 0	STEEL, English		0 0 0	0 0 0
GUAIACUM lb.		0 6 0	1 0	Swedish Keg		14 0 0	0 0 0
MYRRH, E. I.		2 0 0	10 0 0	Faggot		15 0 0	0 0 0
MASTIC lb.		3 0 0	6 6	TIN, Blocks		4 4 0	0 0 0
OLIBANUMcwt.		10 0 0	2 16 0	Ingots		4 10 0	0 0 0
SANDRACH		2 6 0	3 10 0	In Bars		4 5 0	0 0 0
SENEGAL, garbled		3 0 0	4 10 0	Banca .. bd.		4 0 0	0 0 0
TRAGACANTH, Picked		12 0 0	16 0 0	Straits .. bd.		3 19 0	0 0 0
Sorts		4 0 0	10 0 0	Peruvian .. bd.		0 0 0	0 0 0
LAG, Sticklac, Bengal		17 0 0	1 15 0	Plates, p. bx. of 25 Sheets:			
Siam, &c.		2 10 0	3 8 0	No. 1 C 13 $\frac{1}{2}$ by 10 in. ..		1 5 0	0 0 0
Shellac, Liver ..cwt.		2 2 0	2 5 0	1 X		1 13 0	0 0 0
Ruby		2 5 0	2 10 0	1 XX		0 0 0	0 0 0
Orange		2 5 0	2 16 0	SPELTER on the spot .. ton		14 0 0	0 0 0
Block		1 1 0	3 3 0	Delivery		14 2 6	0 0 0
Blood		2 0 0	2 8 0	ZINC, English Sheet		21 0 0	0 0 0
Seedlaccwt.		1 0 0	2 0 0	PLATINA OREoz.		0 0 0	0 0 0
HULLBORN ROOT ..cwt.		1 18 0	0 0 0	ORSEID lb.		0 0 0	0 0 0
HONEY, Fine lb.		1 8 0	2 0 0	MUSK, good and fineoz.		10 0 0	1 5 0
ISLAND MOSS lb.		0 2 0	0 2	NUX VOMICA, bd. ..cwt.		7 0 0	9 6
INDIA RUBBER, solid		0 8 0	0 9	OILS—Imperial measure:			
bottles		1 0 0	1 8	Olive, Florence, & chest ..		15 0 0	18 0
small		1 9 0	2 6	Lucas, jars		5 0 0	0 0 0
INDIGO .. Floras .. lb.		4 2 0	4 7	Gallipoli, 36 $\frac{1}{2}$ gls. ..		40 0 0	41 10 0
Bengal, fine blue ..		6 0 0	6 4	Spanish, ditto		38 0 0	39 10 0
good and fine violet and purple		5 6 0	5 9	Linseed .. cwt. ..		1 11 6	0 0 0
ordinary and middling ..		4 7 0	5 0	Rape, Pale		1 12 0	1 15 "
good and fine copper		5 4 0	5 8	Brown		1 12 0	1 13 0
ordinary and middling ..		3 9 0	5 0	Cod tun ..		36 10 0	0 0 0
Consumers, good and fine		4 8 0	5 2	Seal, Pale		24 10 0	0 0 0
ordinary and middling ..		3 9 0	4 6	Brown, yel., and straw		31 0 0	34 0 0
Java, good and fine ..		4 2 0	6 8	Sperm			
Oude, good and fine ..		3 3 0	4 6	Head Matter		90 0 0	96 0 0
ordinary and middling ..		3 2 0	3 2	Whale, Greenland		0 0 0	0 0 0
Madras, good and fine ..		3 1 0	4 3	South Sea		31 0 0	33 0 0
ordinary and middling ..		1 9 0	3 0	Cocoa Nutcwt.		1 10 0	1 15 0
Kurpah, good and fine ..		3 6 0	5 6	Palmcwt.		27 0 0	28 0 0
ordinary and middling ..		3 0 0	3 5	OLIVES, French & bars .. 3 gals		3 0 0	4 0 0
Manilla good and fine ..				Spanish, keg 3 galls ..		9 0 0	10 0
ordinary and middling ..				OPIMUM, Turkey, bd lb.		10 6 0	14 0
IPHCACUANHA lb.		4 6 0	0 0	Egyptian		7 6 0	8 6
ISINGLASS LEAF, 1st sort ..		10 0 0	13 6	ORCHELLA, Angola ton		35 0 0	0 0
2nd sort		9 0 0	10 0	Cape de Verd		25 0 0	35 0 0
Simovia		2 0 0	2 9	Madeira		30 0 0	0 0
Siberia Purse		5 0 0	6 0	ORPIMENT, E. India		0 0 0	0 0
Short Staple, 1st		8 0 0	14 0	ORANGE FLOWER water .. lb.		0 8 0	0 0
Long ditto		10 0 0	14 0	Peel		5 0 0	0 0
ISINGLASS, Brazil		0 6 0	5 6	ORRIS ROOTcwt.		1 18 0	2 2 0
JALAP lb.		1 4 0	2 2	PELLITORY ROOT lb.		0 6 0	0 0
JUICE OF LEMON gal.		0 10 0	1 0	PINK ROOT lb.		0 5 0	0 8
LAG DYE, Fine lb.		1 8 0	2 4	PITCH, British ..cwt.		5 6 0	0 0
Good		1 2 0	1 5	Archangel		7 6 0	0 0
Middling		1 0 0	1 2	Stockholm		12 0 0	0 0
Ordinary		0 5 0	0 11	Burgundycwt.		0 0 0	0 0
Lake		0 3 0	0 8	PUMICSTONE, sorts .. ton		5 0 0	8 0 0
LIQUORICE Paste, Ital. ..cwt.		3 5 0 0	3 12 6	QUASSIAcwt.		8 4 0	12 0
Block		4 0 0	5 15 0	QUICKSILVER lb.		3 4 0	3 6
MADDERS, Dutch Crop ..cwt.		2 6 0 0	2 10 0	RHATANIA ROOT lb.		0 5 0	0 8
Ombro		2 2 0	2 5 0	RHUBARB, round		0 6 0	3 3
Gamene		1 5 0 0	1 10 0	Flat		0 8 0	3 3
Mull		8 0 0	12 6	Dutch, trimd.		2 6 0	3 9
French		0 0 0	0 0	Russian		10 0 0	12 0
Spanish		1 10 0	2 0 0	SACCHARUM SATURNI, bd. .. lb.		0 0 0	0 0
MADDER ROOTS, Turkey ..		1 6 0 0	1 10 0	SAFFRON, Spanish lb.		1 0 0 0	1 6 0
MAGNESIA, English		2 0 0 0	2 2 0	*SAGO commoncwt.		10 0 0	10 6
MANNA, Flakey lb.		3 0 0	2 6	Pearl		17 6 0	1 4 0
Sicily		1 0 0	1 6	Sago Flour		14 0 0	15 0
MUNJEET, E. I.cwt.		18 0 0	1 2 0	SAL AMMONIAC, E. I. ..cwt.		1 10 0	1 12 0
METALS:				English, Refined		1 18 0	0
IRON Brt. Cakes ton		84 0 0	0 0	SALTS, Glauber		6 6 0	7 0
Tile lb.		83 0 0	0 0	Epsom		6 6 0	6 0
Sheets		0 24 0	0 0	SALEP		18 15 0	14 5 0
Bottoms		0 10 0	0 0	SARSAPARILLA, Brazil .. lb.		0 10 0	1 2
Old		0 24 0	0 0	Honduras		0 10 0	1 6
S. American ton		86 0 0	0 0				
Foreign Cake		0 0 0	0 0				
Foreign Tile		0 0 0	0 0				

B.P. 5 F. 10s.

Public Sale Prices.

F 1 0 0 cwt.
BP 10 0 cwt.

per cwt. un-
wrought &c.
B.P. 8s. 9d. F.
wrought B.P.
&c. F. 10s. old
B.P. 8s. 6d.
old F. 7s. 6d.

6 0
0 0B.

10 per cwt.

5 0 p. cwt.

2 0 2 0 gall.

0 1 0 p. lb.

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DRUGS, &c., continued.		Price.		DRUGS, &c., continued.		Price.	
		£. s. d.	2. s. d.			£. s. d.	2. s. d.
SARSAPARILLA, Vera Cruz		0 4 @	0 5	TALLOW:			
Jamaica ..		1 6 @	3 1	Graves ..		9 0 @	0 0
SASSAPARILLA ROOT .. ton	10 0 0 @	12 0 0		Good Drugs ..		6 0 @	0 0
SAFFLOWER, E. I. .. cwt.	3 10 0 @	7 10 0		PRICES OF CANDLES, per doz.:			
Bombay ..	1 0 0 @	2 0 0		Mould Candles ..		6 0 @	7 0
SHUMAC, Malaga .. cwt.	12 0 0 @	12 0 0		Store ditto ..		4 6 @	5 6
Sicily ..	14 6 @	15 0		TAMARINDS, West Ind., .. cwt.	1 5 0 @	2 0 0	} B.P. 1d. F. 3d.
Trieste ..	4 6 @	6 6		East Ind., bd.	12 0 @	16 0	
SALTPETRE, Rough ..	1 5 0 @	1 9 0		*TAPIOCA .. lb.	0 14 @	0 41	6d. per cwt.
British, Refined	1 9 8 @	1 10 0		TEA: bd.			
Nitrate of Soda	14 9 @	15 0		Bohea, Canton, & Waping	0 6 @	0 7	} B.P. 1d. per lb.
British, Refined ..	0 0 @	0 0		Fokien ..	0 0 @	0 0	
SCAMMONY, Smyrna .. lb.	5 0 @	7 0		Congou, ordinary and out			
Aleppo, Snds	10 0 @	15 0		of condition ..	0 9 @	0 9	
fine	1 8 0 @	1 15 0		good ordinary ..	0 9 @	0 10	
SEEDS, Aniseed .. cwt.	2 2 0 @	3 5 0		mixed blackish leaf ..	0 10 @	0 10	
German ..	2 2 0 @	3 5 6		rather blackish leaf ..	0 11 @	0 11	
E. I. Star ..	3 5 0 @	3 10 0		blackish leaf ..	0 11 @	1 0	
Cumin ..	2 15 0 @	3 10 0		ditto rather strong to			
Caraway, Foreign	19 0 @	1 10 0		strong	1 0 @	1 1	
SENEGA ROOT .. lb.	0 6 @	1 0		Pekoe kind and flavor	1 1 @	1 6	
SENEGA, Alexandria .. lb.	0 2 @	0 6		Ning Yung, fair to fine	0 11 @	1 6	
Smyrna ..	0 0 @	0 0		Pouchong ..	0 9 @	1 0	
East India ..	0 1 @	0 4		Caper, chests	0 0 @	0 0	
Tinnevely ..	0 84 @	1 3		do. in 10 lb. Catty boxes	0 11 @	1 6	
SMALTS, Saxon, FFFE .. lb.	1 2 @	0 0	} 10s. per cwt.	Campol, common	0 0 @	0 0	
FFFFE ..	1 7 @	0 0		good to fine	0 0 @	0 0	
Danish, FFFE ..	1 3 @	0 0		Souchong, ordinary to good	0 9 @	1 2	
FFFFE ..	1 8 @	0 0		fine	1 4 @	2 0	
SNAKE ROOT .. lb.	0 4 @	0 8		Flowerly Pekoe, flat	1 0 @	1 3	
SOAP, Naples, soft ..	1 6 @	1 9	} 20s. per cwt.	fair to fine	1 6 @	2 3	
Castile, hard .. cwt.	3 0 0 @	0 0		very fine and flowery ..	2 4 @	3 0	
British, Mottled	2 2 0 @	2 4 0		Black leaf Pekoe or Hong			
Yellow ..	1 18 0 @	2 2 0		Muey ..	0 10 @	1 4	
White ..	2 14 0 @	0 0		Orange Pekoe, faint & odd	0 11 @	0 11	
Scented ..	0 0 @	0 0		common to fine plain ..	1 0 @	1 1	
Windsor ..	0 0 @	0 0		common to fine scented	1 1 @	1 9	
Oil ..	0 0 @	0 0		Twankay, common	0 10 @	0 11	
Soft B. B. ..	1 0 0 @	0 0		good	1 04 @	1 14	
B. S. ..	0 0 @	0 0		fine to Hyson kind	1 2 @	1 3	
B. ..	0 0 @	0 0		Hyson skin, common	0 10 @	0 11	
SODA .. ton.	5 17 6 @	6 0 0		good to fine	1 0 @	1 2	
ASHES, Canada Pot 1st. cwt.	1 10 6 @	0 0		Hyson, common ..	1 1 @	1 3	
Pearl 1st	1 8 0 @	1 9 0		fair to good ..	1 4 @	1 10	
United States Pot	0 0 @	0 0		fine ..	2 0 @	2 6	
Pearl	0 0 @	0 0		extra fine ..	2 10 @	3 10	
Soy, bd. .. gallon	4 0 @	0 0		Young Hyson, common ..	0 84 @	1 1	
SPICES—				good to fine	1 2 @	2 7	
Cassia Lignea, ord. to mid.	6 0 0 @	6 2 6	} B.P. 1d. F. 3d. per lb.	Imperial, common ..	1 2 @	1 4	
good to fine	6 2 6 @	6 5 0		good to fine ..	1 5 @	2 6	
Cassia Buds ..	6 5 0 @	0 0		Gunpowder, common	0 8 @	1 7	
Cinnamon, Ceylon, 1st quality	1 0 @	3 4	} B.P. 3d. F. 6d. per lb.	good to fine	1 9 @	4 0	
2d ..	0 8 @	1 10		TURNERIO, Bengal .. cwt.	16 0 @	17 0	
3d ..	0 0 @	0 0		Java ..	10 0 @	13 0	
Malabar	0 0 @	0 0		Madras ..	10 0 @	15 6	
Tellisherry ..	0 8 @	1 10		TERRA JAPONICA .. cwt.	14 9 @	15 0	
Cloves, Amboyana ..	0 7 @	0 9	} 6d. per lb.	Sienna ..	1 2 @	1 4	
Bourbon & Zanzibar	0 54 @	0 64		VALONIA, Smyrna .. ton	16 0 @	17 0 0	
Penang ..	0 10 @	1 2		Picked Morea ..	13 0 @	14 0 0	
Ginger, Bengal ..	15 0 @	2 10 0		VANILLAS, Brazil .. lb.	1 5 0 @	2 13 6	} 6s. per cwt.
Malabar ..	17 0 @	3 2 0	} B.P. 5s. F. 10s. per cwt.	Vera Cruz	1 5 0 @	1 10 0	
Jamaica ..	2 1 0 @	10 0 0		VERDIGRIS, Foreign ..	0 9 @	0 10	} 6s. per cwt.
Barbadoes ..	0 0 @	0 0		English ..	1 3 @	0 0	
Mace ..	1 10 @	2 7		VERMILION, China .. lb.	4 0 @	4 3	
Nutmegs, brown ..	2 0 @	3 9	} 8s. 6d. per lb.	English ..	5 0 @	0 0	
limed ..	1 4 @	3 0		VITRIOL, blue ..	1 8 0 @	1 10 0	
Pepper, bd. Malabar, heavy shot	0 39 @	0 31		Foreign, white ..	14 0 @	0 0	
light and half heavy	0 31 @	0 31		English, ditto ..	1 4 0 @	1 5 0	
Eastern ..	0 3 @	0 31	} 5s. per cwt.	Oil of ..	0 1 @	0 9	
white ..	0 54 @	0 10		WAX, Mogadore .. cwt.	5 17 6 @	6 10 9	
long ..	0 0 @	0 0		American ..	5 5 0 @	0 0	
Pimento ..	0 41 @	0 51	} 5s. per cwt.	Russian ..	7 10 @	0 0	
SPONGE, fine .. lb.	9 0 @	1 5 0		Hambro' ..	7 12 6 @	8 0 0	
ordinary ..	1 0 @	7 6		East India ..	5 10 0 @	9 0 0	
SPIRITS OF TURPENTINE .. cwt.	1 14 0 @	1 15 6		African ..	5 0 0 @	7 0 0	
SULPHATE OF QUININE .. oz.	11 9 @	12 0		White Hambro' ..	7 0 0 @	8 10 0	
SQUILLA, dry .. lb.	0 1 @	0 2		English .. cwt.	2 0 0 @	9 15 0	
undried ..	0 0 @	0 0		Cape ..	5 15 0 @	6 15 0	
SPERMACEIN, English .. lb.	1 4 @	1 5		West India ..	0 0 @	7 0 0	
American ..	0 0 @	0 0		WELD	0 0 @	0 0	
STARON, English ..	2 6 0 @	3 12 0	} 1s. B.P. 2s. 6d. F. per cwt.	WOOD	0 0 @	0 0	
Irish ..	0 0 @	0 0		WOOD, Sapan Bimas ..	9 10 0 @	11 10 0	
POTATO FARINA ..	14 6 @	15 6		Siam ..	8 0 0 @	10 0 0	
TALLOW:							
Petersburg, new .. cwt.	1 19 6 @	1 19 9					
old ..	1 17 6 @	1 18 6					
Delivery last three months	1 19 6 @	1 19 9					
South American ..	1 15 0 @	1 17 6					
Odesa Sheep ..	0 0 @	0 0					
North American ..	0 0 @	0 0					
Australian ..	1 15 0 @	1 17 0					
Town Tallow .. cwt.	1 19 0 @	0 0	} B. P. 1d. Foreign 1s. 6d. per cwt.				
Fat by ditto ..	2 1 @	0 0					
Russian Candle ..	2 0 0 @	0 0					
Melted Stuff ..	1 9 0 @	0 0					
Rough ditto ..	18 0 @	0 0					

POMMADE D'HEBE, FOR CHANGING OLD LADIES INTO YOUNG ONES.—Juice of lily bulbs, 2 oz., honey, 2 oz., white wax, 1 oz., rose water, 3 drms. First melt the wax, and thoroughly incorporate the rest therewith. Apply to the face upon going to bed, and rub off in the morning with a linen cloth. This composition is said to remove wrinkles and furrows. Properly speaking, it fills them up.

VINAIGRE ROSAT.—Dry rose leaves, red, $\frac{1}{2}$ pint, good vinegar, 8 qts. Macerate for two weeks in a closed vessel, and after that filter.

PASTE OF SWEET ALMONDS.—Take peeled bitter almonds, 12 oz.; rice flour, 7 oz.; bean flower, 3 oz.; fine orris powder, 1 oz.; pulverized carbonate potassa, 4 drms.; alcoholic essence of jasmine, 3 oz.; essential oil of rhodium, 2 drops; essential oil of neroli, 1 drop. Powder the almonds, and, to prevent the separation of the oil, add a little water during the trituration. The almonds being reduced to a homogeneous mass, mix in the rice and bean flowers and the powdered orris. Rub up well, so that the mixture may be thorough and uniform. That made, dissolve the carbonate of potassa in a little water, and give it in successive portions to the above mass, adding immediately afterward the essence of jasmine and the essential oils, previously joined and well shaken together. After a thorough rubbing up, the paste is then ready for being boxed. If there is not enough liquid to make the paste of proper consistence, add q. s. of rose water.

PÂTE D'AMANDE LIQUIDE À L'ALCOHOL, PERFUMED OR NOT PERFUMED.—Dilute with weak alcohol (or an alcoholic tincture, as, for instance, that of cinnamon, or vanilla, thinned with brandy) 10 lb. of sweet almond paste, and pass the mixture through a mill for the purpose (a paste-mill), and boil in a tinned vessel over a good but not too lively fire, stirring it all the time to prevent the adherence of particles to the bottom. The paste being half boiled, remove from the fire, and add powdered alum, 2 oz.; powdered spermaceti, 2 oz.; white salt, 4 oz.; yellows of eggs thinned with brandy, 24 oz. Replace afterwards upon the furnace, and continue boiling until the paste readily detaches itself from the spatula. Then take it from the fire, stir several times whilst it is cooling, and pass it through a hair sieve, and, if it is too thick, thin out with a sufficiency of plain brandy, or of brandy having the odour of the tincture employed. Perfumed brandy may be substituted for the alcohol prescribed.

PÂTE D'AMANDES DES SULTANES.—Take white paste of sweet almonds in powder, 6 lb.; then dissolve in 1 pint of alcohol essence bergamot, 4 drms.; essence of lemon, 2 drms.; essence of Portugal, 2 drms.; essential oil of cloves, 2 drms.; liquid balsam Peru, 2 drms.; essence of fennel or orris, $\frac{1}{2}$ drm.; rose water, $\frac{1}{2}$ pint; orange flower water, $\frac{1}{2}$ pint. To increase the fragrance, add essence of amber, 2 drms.; essence of musk, $\frac{1}{2}$ drms. Temper the paste with this composition.

PÂTE D'AMANDES, IN CAKES, FOR BATHS.—Make of a select liquid paste a paste sufficiently firm, and cut into cakes or tablets. This article is most excellent for use in the bathtub. The perfumes of the foregoing can be varied to suit taste.

EAU DE COLOGNE OF THE FRENCH CODEX.—Essence of bergamot, 2 oz.; essence of lemon, 2 oz.; essence of limette, 2 oz.; essence of orange, 1 oz.; essence of petit grain, 1 oz.; essence of cedrat, 1 oz.; essence of rosemary, 1 oz.; essence of lavender, $\frac{1}{2}$ oz.; essence of orange flowers, $\frac{1}{2}$ oz.; essence of cinnamon, 3 drms.; spirit of rosemary, 8 oz.; compound water of mélisse, 3 lb.; alcohol 32° B., 12 lb. Distil over a water bath nearly to dryness, and add eau de bouquet, 1 lb.

EAU DE COLOGNE BY M. PLENEY.—Alcohol 33° B., 24 lb.; essence of neroli, 3 drms.; essence of lemon, $3\frac{1}{2}$ scruples; essence of bergamot, 27 grains; essence of cedrat, 27 grains; Hungarian water, $3\frac{1}{2}$ scruples; lavender water, 18 grains; eau de vulnéraire, 21 grains; rosemary water, 14 grains. Put the rosemary water in an unstopped bottle, the spirits of wine into a large carboy, and add consecutively thereto the essences, shaking well together all the time. That done, close up the vessel, and expose it for forty-eight hours to a mild heat, then set it by for twenty-four hours to cool, add the rosemary water, and filter through unsized brown paper, until it is perfectly clear.

EAU DE COLOGNE BY DOROCHEBEAU, PARIS.—Spirits of wine, tasteless and inodorous, 7 quarts; essence of Portugal, 11 drms.; essence of bergamot, 11 drms.; essence of lemon, 1 oz.; essence of neroli, fine, 10 drms.; essence of neroli (petit grain), 12 drms.; essence of rosemary, 1 oz.; essence of lavender, 1 oz.; rose water, 14 drms.; jasmine water, 13 drms.; orange flower water, 16 drms. Mix well the whole by thorough shaking, and filter through four papers. After two weeks' repose, submit to two distillations, then bottle

up the water and let it remain in a temperate place for a year. This cologne is of 30° to 33°, and is in the greatest perfection as to fragrant of odour.

EAU DE COLOGNE BY M. MARIE, DIJON.—Alcohol, 30 quarts; water, 16 quarts; essence of bergamot, 12 oz.; essence of cedrat, 2 oz.; essence of lemon, 2 oz.; essence of Portugal, 2 oz.; essence of neroli, 2 oz.; essence of rosemary, $\frac{1}{2}$ oz.; essence of cloves, 2 drms.; tincture of benzoin, 4 oz.; citronelle, 1 oz.; peppermint leaves, 2 oz.; mélisse leaves, 2 oz.; rosemary leaves, 1 oz.; angelica leaves, 2 oz.; cinnamon, 2 drms.; mace, 2 drms.; anise, 8 oz. Bruise the mace, cinnamon, and anise, infuse them for two days, then add to the rest of the materials, and distil off 35 quarts of cologne.

EAU DE COLOGNE, RECTIFIED.—Fresh lavender flowers, 4 oz.; absinth tops, 2 oz.; fresh hyssop tops, $1\frac{1}{2}$ oz.; fresh marjoram tops, 2 oz.; anise seed, $1\frac{1}{2}$ oz.; juniper berries, 1 oz.; caraway seed, 10 drms.; fennel seed, 1 oz.; cumin seed, 10 drms.; cardamom seed, $2\frac{1}{2}$ oz.; cinnamon, 2 oz.; nutmeg, 2 oz.; fresh serpolet tops, 2 oz.; dry angelica root, 4 oz.; cloves, 1 oz. Let each of these articles be previously prepared as is necessary, and then throw them altogether in a still, and add thereto 38 quarts of alcohol. After forty-eight hours' maceration, distil over a water bath, and draw off all the spirit. To the liquid thus obtained carefully add, according to rule, the following articles, each of approved quality and freshness:—Compound water of mélisse, 5 lb.; spirit of rosemary, 8 lb.; neroli, 6 drms.; essence of lemon and cedrat, each 1 oz.; essence of bergamot, 10 oz. Rectify the whole by redistillation over a water bath moderately heated.

EAU DE COLOGNE (DOUBLE).—Dissolve in 25 quarts of alcohol—essence of bergamot, 12 oz.; essence of cedrat, 2 oz.; essence of lemon, 2 oz.; essence of lavender, 1 oz.; essence of Portugal, 2 oz.; essence of thyme, 1 drm.; essence of neroli, $2\frac{1}{2}$ oz.; essence of rosemary, $2\frac{1}{2}$ oz. Distil, and add to the liquor eau de mélisse 2 quarts, and dilute to 30° B. with orange flower water. Rectify the whole by redistillation, and what runs off is a cologne of superior quality.

EAU DE COLOGNE, CONCENTRATED, BY MADAME CROZET, PARIS.—Essence of Portugal, 12 drms.; essence of bergamot, 12 drms.; essence of cedrat, 1 oz.; essence of lemon, 1 oz.; essence of neroli, fine, 12 drms.; essence of neroli (petit grain), 1 oz.; essence of rosemary, 2 oz.; essence of lavender, 2 oz.; tincture of benzoin, 1 drm. Infuse the whole in a quart of well-rectified alcohol for two weeks, stirring several times daily during the interval. Distil, and repeat; the product will be a quart of highly concentrated fragrant cologne, which can be diluted with ten times its volume of spirits of wine, to form an excellent article, or with twenty times for a cologne of ordinary quality. This concentrated water, occupying but little bulk, is on that account of more easy and less costly transportation than the ordinary cologne.

POUDRE DENTIFRICE OF M. MAURY, DENTIST.—Red bark, 2 oz.; magnesia, $\frac{1}{2}$ lb.; cochineal, $1\frac{1}{2}$ oz.; calcined alum, 1 oz.; cream of tartar, 1 lb.; essential oil of mint, 5 drms.; essential oil of cinnamon, 3 drms.; esprit de rose, 1 drm. Powder separately the first five materials; rub up the alum with the cochineal and add the cream of tartar and bark. Put the essences into a bottle with the magnesia, and when they are absorbed add the first powders, and, after thoroughly incorporating the whole, pass through a very fine sieve of silk. This powder cleanses the teeth without injury to the enamel, strengthens the gums, gives them a healthy red colour, and the mouth an agreeable freshness. It is applied by being rubbed on with a soft brush two or three times a week. For children once a week is sufficient. As this is soluble, care must be taken not to moisten more than is wanted for present use, and to keep the box containing it in a dry place.

SIMPLE PASTILES.—Take $\frac{1}{2}$ oz. of benzoin, 1 drm. of cascarilla, 2 oz. of charcoal, and 1 drm. of saltpetre. Reduce all of the above to powder, and mix into a paste with a solution of 1 oz. of gum tragacanth to the pint.

PASTILLES AU BENZOIN.—Take of benzoin, $\frac{1}{2}$ lb.; storax, 4 or 5 grains; cascarilla, 5 grains; dry Peru balsam, 2 drms.; cloves, $\frac{1}{2}$ drm.; charcoal, $\frac{1}{2}$ oz.; nitre, 1 drm.; essential oil of orange flowers, $\frac{1}{2}$ drm.; tincture of ambergris, $\frac{1}{2}$ drm. All these materials must be in fine powder.

INK FOR MARKING LINEN BY STAMPING.—Sulphate of manganese, 1 drim., distilled water, 1 drim., powdered sugar, 2 drms., lampblack, $\frac{1}{2}$ drim. Make into a semi-liquid paste. This paste is used with a stamp. The mark is dried, then washed in solution of caustic potash, and dried once more; then again washed in water. The name now stands out boldly.

POMMADES DES SULTANES.—Melt over a water bath 1 oz., white wax, and 2 oz. spermacetti, withdraw from the fire, and then add 8 oz. oil of sweet almonds, 8 oz. oil of white poppy, and continue beating together without ceasing until the mixture begins to get white; then put in $\frac{1}{2}$ oz. of Mecca balsam and a gill of rose water, prolonging the rubbing until the mixture will take up no more rose water, and detaches itself in large flakes or lumps. In filling the pots take care to cover the contents with a little rose water. This is among the best preparations for softening the skin and preserving its freshness.

POUDRE DE CRYLON, BY MAYER, PARIS.—Cream of tartar, 32 oz., calcined alum, 6 oz., carbonate of magnesia, 12 oz., rock candy, 12 oz., pulverized cochineal, $2\frac{1}{2}$ oz., essence of cinnamon, 3 oz., essence of cloves, $2\frac{1}{2}$ oz., essence of mint (English), $1\frac{1}{2}$ oz. All these materials being finely powdered are mixed together and sifted, and the whole rebolted through silk. The cream of tartar should previously be dried by a moderate heat.

TOILET VINEGAR, BY SINFAR, PARIS.—Alcohol, 33°, 8 qts., white vinegar, 2 qts., Cologne water, 1 pint, extract of benzoin, 2 oz., extract of storax, 2 oz., acetic acid, 4 oz., essence of lavender, $1\frac{1}{2}$ oz., essence of cinnamon, 1 drim., essence of cloves, 1 drim., ammonia, 1 drim. Mix together the alcohol, lavender, cinnamon, and cloves, and macerate for eight days; then add the vinegars, Cologne extracts, and ammonia; colour and filter through paper.

CRÈME COSMÉTIQUE DU BENGAL, BY CHAUMAS.—Sweet and bitter almonds, 4 lbs., spermacetti, 4 oz., white wax, 4 oz., white soap, 4 oz., distilled water, 8 qts., simple rose water, 2 qts., spirit of rose, 1 qt., spirit of bitter almonds, 1 qt., essence of vanilla, $\frac{1}{2}$ oz., essence of rose, $\frac{1}{2}$ oz., tincture of benzoin, 4 oz., gum tragacanth, 1 drim. Scald the almonds, peel, and finely grind them in a mill, and after having melted the spermacetti and wax over a water bath, and then added the soap thereto, incorporate them into that mixture, pestling continually until ground in. This well done, add the essence of rose, vanilla, and benzoin, thinning out the composition with the distilled and rose waters, and the spirits of rose and almonds previously mixed together in a separate vessel. To drain the liquid, throw it upon a clean linen cloth arranged upon a funnel, dipping into a glass jar. When it has once filtered, pass the cream a second time through a finer cloth, to separate the smaller particles of the almonds. Finally, mix 1 drim. of carmine with a solution of $\frac{1}{2}$ drim. tragacanth in two decilitres of water, and add it to the cream to obtain a beautiful rose colour.

PASTILLES DES INDES (YELLOW).—Take of yellow sanders, 8 oz.; aloe wood, 4 oz.; fine cinnamon, 4 oz.; rhodium wood, 4 oz.; cedar wood, 4 oz.; clove wood, 2 oz.; sassafras, 2 oz.; myrrh, 2 oz.; benzoin, 4 oz.; storax, 4 oz.; vanilla, 2 oz.; musk, 2 drms.; ambergris, 2 drms.; civet, 1 drim.; and amber, 2 oz. Sift these materials as finely as possible, and use the mucilage as before, adding $\frac{1}{2}$ drim. of essential oil of cloves, and as much of essential oil of rhodia. Of the Form of the Pastilles: After having well kneaded and rolled the paste upon a marble slab, it is elongated into slender lengths, which then are subdivided into small pieces of about an inch in height. These pieces in their turn are flattened with the blade of the spatula, or else formed with the fingers into little cones. Such were the old methods; they are now superseded. It is better to spread the pastille mass or paste with a rolling-pin, and from this sheet cut out with suitable punches small pieces representing leaves, hearts, the heads of animals, or of any other device.

ESSENCE OF VANILLA.—Take of vanilla, cut into pieces, 3 lb., and infuse it in a warm place together with spirit of ambrette, 4 qts.; cloves, 2 drms.; cinnamon, 4 drms.; musk, $\frac{1}{2}$ drim. After several months' digestion, filter, and put up in handsome bottles.

EXTRAIT DE BOUQUET.—Spirit of jasmine, 2 qts.; extract of violets, 2 qts.; spirit of acacia, 1 qt.; spirit of rose, 1 qt.; spirit of oranges, 1 qt.; extract of oillet, 1 qt.; flowers of benzoin, 4 drms.; essence of amber, 8 oz.

EXTRAIT DE FLEURS DE PECHER (PEACH BLOSSOM).—Alcohol, 36°, 6 qts.; bitter almonds, 6 lb.; spirit of orange flowers, 2 qts.; essence of almond laurel, 4 drms.; essence Peru balsam, 4 drms.; essence of lemon, 4 oz.

ESSENCE OF MUSK.—Musk, 5 oz.; civet, 1 oz.; spirit of ambrette, 4 qts. Digest together, in a warm room, for about two months.

ESSENCE OF AMBER.—Ambergris, 4 oz.; musk, 2 oz.; spirit of ambrette, 4 qts.

ESSENCE OF CIVET.—Senegal civet, $1\frac{1}{2}$ oz.; musk, $\frac{1}{2}$ oz.; dry vouli-vasa, 1 oz.; black amber, $\frac{1}{2}$ oz.; spirit of ambrette, 4 qts.

PARFUM DES ROIS.—Alcohol, 36°, 8 qts.; storax, 6 oz.; benzoin, 1 lb.; aloe wood, 8 oz.; esprit of roses, first infusion, 1 qt.; esprit of orange flowers, 1 qt.; essence of amber, 8 oz.; essence of musk, 8 oz.; essence of vanilla, 1 lb.

PASTILLES A LA ROSE.—Gum, in impalpable powder, 6 oz.; olibanum, 6 oz.; storax, 6 oz.; saltpetre, 4 oz.; powder à la rose, in impalpable powder, 8 oz.; charcoal, 2 lb.; essence of roses, $\frac{1}{2}$ oz. Mix together the powders, and add to them a quart of rose water in which has been dissolved an ounce of gum tragacanth. Rub up well in a mortar, and of this paste form the pastilles. They are burned upon a chafing-dish or perfume-pan made for the purpose. The pastilles, the receipts for which will follow, are, according to Laugier, operated with similarly as the above.

PASTILLES A LA VANILLE.—Gum galbanum, 6 oz.; gum olibanum, 6 oz.; storax, 6 oz.; nitre, 4 oz.; cloves, 4 oz.; powder à la vanille, 8 oz.; charcoal dust, $2\frac{1}{2}$ lb.; essence of cloves, 2 drms.; essence of vanilla, first infusion, 4 oz.

KNOTTING FOR DAMP WALLS.—An excellent application very successfully introduced by a Lincolnshire painter consists of shellac dissolved in wood naphtha. It is of paint-like consistence, and is usually applied on walls about to be papered. I suggested for a very damp wall the previous application of dilute sulphuric acid of double the ordinary strength, and by means of it and the varnish the moisture was resisted completely; but, as I presume the moisture to be muriate of lime, I think, perhaps, sulphate of ammonia would be preferable to sulphuric acid.

FOR IMPRESSION PAPER.—Hyd. bichlor., gr. x.; ol. orig., gr. xx.; ol. olivæ, 3j. Prussian blue, chrome, &c., may be used as colouring.

WHITE VARNISH.—Gum juniper, 12 oz.; Ohio turpentine, $1\frac{1}{2}$ oz.; sp. wine, 3 lbs.

TRANSPARENT VARNISH.—Gum juniper and Canada balsam, of each $\frac{1}{2}$ oz.; sp. wine, 1 oz.

SIZE.—Isinglass, $\frac{1}{2}$ oz.; water, 2 oz.

DURABLE VARNISH.—Shellac, 3vj.; S. V. R., Oij.

SHINING VARNISH.—Gum juniper, 3 oz.; shellac and resin, of each, $\frac{1}{2}$ oz.; sp. of wine, 1 pint.

TURPENTINE VARNISH.—Resin, lb. ij.; sp. turp.

COMMON RED WAX.—Shellac, 6 oz.; yellow resin, 11 oz.; whiting, $\frac{1}{2}$ oz.; red lead, 6 oz.; sp. turpentine, $1\frac{1}{2}$ oz.

COMMON BOTTLE WAX.—Cere flavæ resinæ, 3ij.; terbinthine com., 3iij.

RED WAX.—Shellac, 2 lb.; vermilion, 4 lb.; sp. turpentine and olive oil, of each 3 oz. Pull into sticks, and polish with a cloth till dry.

BLACK WAX.—Shellac, 2 lb.; lampblack, 4 lb.; sp. turpentine and olive oil, of each 3 oz. Roll in to sticks, and polish with a cloth till dry.

COMMON BLACK WAX.—Resin, $\frac{1}{2}$ lb.; beeswax, 1 oz.; shellac, 1 oz.; lampblack, $1\frac{1}{2}$ oz.

RED INK.—Vermilion, 3j. Oij.; acacia, 3j.; ammonia, 3j.; aq. croci, 3j.; aq. croci croci, 3j.; aq. usæ, 3j.

TO VARNISH PRINTS.—Painters use three coatings of parchment size, and then lay over a coat, or two of clear copal varnish; but isinglass size is recommended (as being sooner prepared) where the quantity required is only small.

FRENCH GREY WASH.—Whiting, $1\frac{1}{2}$ lb. to 2 lb.; damp blue, $\frac{1}{2}$ lb. to 1 lb.; blue black, $\frac{1}{2}$ oz. to 2 oz.

POTATO BREAD.—Boil the potatoes not quite so soft as common, then dry them a short time on the fire, peel them while hot, and pound them as fine as possible; next put a small quantity of pearl ash to new yeast; while it is working briskly, add as much rye, meal, or flour, as can be worked in. Mix the whole well together, but do not add any water to it. After the dough is thus prepared, let it stand an hour and a half or two hours, before it is put into the oven; observe it will not require so long baking as regular flour bread. 2. Take 5 lb. of dried potato starch, and 5 lb. of the pulp; dissolve a suitable quantity of leaven or yeast in warm water, the mixture being exactly made the night before; let it be all night in a kneading-trough, well covered and kept warm until the next day—this is the second leaven; then add 5 lb. more of starch, and the same quantity of pulp, and knead it well; the water must be in the proportion of $\frac{1}{2}$ part, that is, upon 20 lb. of paste there must be 5 lb. of water, which is to be used as hot as possible.

POTATO JELLY.—To obtain this jelly in perfection, let a potato be washed, peeled, and grated; throw the pulp, thus procured, into a jug of water, and stir it well. Pass the mixture of pulp and water over a sieve, and collect the water which passes through into a basin. Let this stand for a few minutes, and a sufficient quantity of starch will have fallen for the purpose required. Pour off the water, and then keep stirring up the starch at the bottom of the basin, while boiling water is being poured upon it; and it will soon and suddenly pass to the state of a jelly. The only nicety required is to be careful that the water is absolutely boiling, otherwise the change will not take place. It does not require more than eight minutes to change a raw potato into a basinful of most excellent jelly, which has only to be seasoned with a little sugar, nutmeg, and white wine, to please the most fastidious palate.

GOOSEBERRY WINE.—1. Ten gallons of gooseberries are to be bruised in a tub, and left so for twenty-four hours. The pulp thus prepared is to be introduced, either at once, or in successive portions, into a hair-cloth or canvass bag, and submitted to pressure. The matter remaining in the bag is to be returned into the tub, and five gallons of tolerably hot water are to be poured on; the whole is to be well mixed up. After thus remaining in the tub well-covered for about twelve hours, the matter is to be pressed through the bag, and the liquor obtained is to be mixed with the original juice. The solid matter of the fruit is then worth very little, and may be thrown away. In every 5 gallons of the liquor, consisting of the mixture of the original juice with the infusion, 12 lbs. of white sugar are to be dissolved perfectly. If the liquor be now left to itself it will, after some hours, show symptoms of a commencing fermentation. In proportion as the fruit is ripe the temperature of the weather ought to be high. Should it be very cool weather the liquor should be placed near the fire. When the fermentation is gone down, which will be in two or three weeks, it should be bunged down in a cask, and in a few months it will be fit to tap. 10. Take 50 lbs. of green gooseberries, bruise or crush them well, and macerate them for two or three days in five gallons of water, then draw off the clear liquor, and press the pulp, add about 26 lbs. of refined sugar, and make the quantity of liquor up to 10½ gallons; put it into a cask, and let it work for a month or six weeks, occasionally filling it up. When done working, bung it up, fine it in December following, and bottle it in March.

GOOSEBERRY CHEESE.—Bake any quantity of the rough red gooseberries until they break to pieces very easily. Mash them up, and pass them through a hair sieve; now put this pulp into a preserving pan, and boil it gently. To every pound of gooseberries put $\frac{1}{2}$ lb. of sugar, adding a little at a time. It must be boiled for a long time, until it is seen to set hard, when a little of it is cooled.

TO CORRESPONDENTS.

* Gentlemen who send manuscript to the CHEMICAL RECORD under arrangement for payment are informed that original matter alone will

be allowed to count; no abstracts, translations, or adaptations being receivable under the terms proposed. The propriety of this will be obvious.

"Can you furnish to me, a constant subscriber," says Mercurius, "any means by which gold leaf, after it is put on any metal, can have the dead appearance imputed to it termed *or-molu*?"—We do not know how this appearance, under the circumstance indicated, is produced, but we imagine a slight action in the gold leaf by nitro-muriatic acid might be efficient.

"The following mixture," says a correspondent, "turns rosy and bad before four days; it is the prescription of one of our first physicians who is travelling abroad:—*Rx.* Quins disulph., 30 gr.; acid. sul. dil., gutt. 30; syr. aurant. 3½; aq. distillat. 3 viss. Dose, a tablespoonful three times daily. What is the cause of its turning rosy and sour? And, as the physician is abroad, will the following be equally efficacious and safe?" Our correspondent omits to send us the following referred to. Under the circumstances, however, the omission is immaterial, for whatever its nature our opinion would not have been modified thereby. We object to any divided responsibility between physician and dispenser, and only in one case, viz., in which a mistake, narrowly affecting life, has evidently been made, is the dispenser warranted in altering a prescription. In the above formula the royness is caused by the action of the acid on the sugar. A less amount of acid would have been better.

"Mr. Peter Jackson."—Ellis's formula for powder of magnesia and sulphur is as follows:—*Rx.* Precipitated sulphur, magnesia, of each half an ounce. Mix. A teaspoonful three or four times a day as an aperient. "Egrotans."—Salep is the prepared bulbs of several species of orchidaceous plants; it is more nutritive than arrowroot or sago, and hence it is adapted for the convalescent rather than for the sick. These roots are powdered with much difficulty; the mucilage is prepared by dissolving the powder in boiling water, constantly stirring, and adding sugar and milk to the solution. *Soubiseaux* orders powdered salep, half an ounce, to be boiled with a sufficient quantity of water till dissolved, four ounces of sugar added, and to be aromatized according to taste.

"Mr. Henry Bernays."—Iron cement used for making permanent joints generally between surfaces of iron is thus made:—Clean iron borings, or turnings, are to be slightly pounded, so as to be broken but not pulverized; the result is to be sifted coarsely, mixed with powdered sal-ammoniac and sulphur, and enough water to slightly moisten the whole. The proportions are: 1 sulphur, 2 sal-ammoniac, and 80 iron. No more should be mixed than can be used at one time.

"An Amateur" desires that we should give him full descriptions for the fitting up of a laboratory. Our correspondent tells us expense is with him but a secondary object, so we need not hesitate to curtail our list of requisites on that score. We fear our reply will not be particularly satisfactory to our correspondent. Money, usually so omnipotent, we regard in the light of an evil to a person ignorant of chemistry, and desirous of making himself acquainted with the science; the opinion may appear strange, but it is sufficiently justified by many facts which have come under our notice. A great element of chemical success is the power of manipulation, of putting up with seemingly inadequate means, and arriving, nevertheless, at a successful result. This desirable quality, the free command of money, has a tendency to suppress, to check in its development. Let our correspondent enter himself as a pupil in one of our chemical institutions: he will there acquire a general notion of chemical manipulation, and experience will suggest the kind of laboratory most requisite for the carrying out of his class of operations. We say class of operations, for no chemist, however extended the sphere of his researches, explores equally every field of chemical inquiry.

"Mr. James Bettarton" desires us to inform him if any easy method exists of extemporizing the manufacture of illuminating gas for a private family. Of course there is a means of effecting this; but gas-making, at least from coal, on the small scale, is troublesome; but in the United States domestic gas-making machines are not uncommon, but they are found to act upon oil and fat, not coal. Kitchen refuse is in general employed, and answers perfectly well. Oil gas is much more illuminative than coal gas, on account of the greater amount of olefant gas which it contains. Probably it is scarcely necessary for us to remind our correspondent that the illumination of gas increases with the amount of carbon it contains.

"A Patentee" will have observed that we have anticipated his advice, and have treated on the subject of the patent laws in our current number.

"Mr. Henry Littleton."—We believe the water supplied by the New River Company to be well adapted for all ordinary purposes of domestic economy. London pump-water is more agreeable for drinking, but in consequence of the earthy salts it holds in solution is by no means so fit for washing.

"A Correspondent" desires a formula for concentrated extract of sarsaparilla. We subjoin one: *Rx.* Sarsaparilla bruised, sixteen ounces; liquorice-root, bruised; guaiacum wood, rasped; saffron bark, sliced, each two ounces; meserion, sliced, six drachms; diluted alcohol, eight pints. Digest for fourteen days, strain, express, and filter. Evaporate in a water bath to twelve fl. ounces, add eight ounces of sugar, and remove from the fire when this is dissolved. Dose 3j. three or four times a day.

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TESTIMONIALS.

From JOSEPH HENRY GREEN, F.R.S., President of the Royal College of Surgeons, London; Senior Surgeon to St. Thomas's Hospital; and Professor of Surgery in King's College, London.

I have made trial of Mr. Franks's Solution of Copaiba, at St. Thomas's Hospital, in a variety of cases of discharges in the male and female, and the results warrant my stating, that it is an efficacious remedy, and one which does not produce the usual unpleasant effects of Copaiba.

(Signed)

JOSEPH HENRY GREEN.

Lincoln's-inn-felde, 15th April, 1835.

From BRANSBY COOPER, Esq., F.R.S., one of the Council of the Royal College of Surgeons, London; Surgeon to Guy's Hospital, and Lecturer on Anatomy, &c.

Mr. Bransby Cooper presents his compliments to Mr. George Franks, and has great pleasure in bearing testimony to the efficacy of his Solution of Copaiba in Gonorrhoea, for which disease Mr. Cooper has prescribed the solution in ten or twelve cases with perfect success.

New-street, April 13th, 1835.

From H. A. CESAR, M.D., Surgeon, Professor of Anatomy in the Cork School of Medicine and Surgery; late President of the Hunterian Society of Edinburgh, &c. &c.

I have frequently prescribed Franks's Specific Solution, and deem it a valuable remedy in cases where Balsam of Copaiba may be prescribed with propriety, and have no hesitation in stating it is superior to any other preparation of the Balsam. (Signed) H. A. CESAR, M.D.

South Mall, Cork, Nov. 9th, 1841.

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WITH POWER TO INCREASE TO A MILLION.

PROSPECTUS.

In ushering before the world for its consideration and patronage any addition to a subject previously well known, it is generally expected and required that there should be at least an appearance of novelty, although the subject itself is incapable of receiving any material improvement. The projectors of this Society, however, from experience and correct calculation, having discovered new principles and features in Life Assurance, so peculiarly adapted to the feelings, views, and wants of literary men, artists, musicians, and all persons connected with every branch of art and science, are convinced, when such advantages become known and appreciated, the ATHENÆUM must take the lead amongst those Societies which are ever on the watch to achieve new and beneficial results for all who have confidence in their exertions.

Men of letters and the liberal arts are too generally regarded with censure rather than with commiseration, on account of the unfortunate circumstances so often attending their worldly affairs, and which have unjustly given them a character for improvidence; yet few persons in the active pursuits of business can form a proper notion of the many causes which prevent the student, the scholar, and the secluded artist from being so fortunate as themselves; nor is it here considered fit to analyze such causes, or set right such notions. The object of this Society, therefore, is to allow the man of letters and the artist to indulge in that dreamy existence so peculiarly his nature, and so essential to the development of his talent, and give protection and provision where so much required. For while this urged improvidence is admitted to be no consequence of selfishness,—it being well known that in no other class is disinterested nobleness of spirit so often and unequivocally exhibited,—yet no means have hitherto been devised to arrest this censured characteristic. This Society, therefore, wishes to open an independent course for the consideration of

men of letters, art, and science, especially as it is brought before them with associations of their own, and in no way assuming the offensive and humiliating position of charity.

Many a great work has been left unfinished, many a teeming brain has given way before those powerful foes to genius, anxiety and fear of the future! How often has the man of talent paused and trembled, while he has contemplated the destitution of his family, and all that is dear to him, if overtaken by death in the midst of his projects; and while Life Assurance is suggested to obviate such afflicting thoughts, then the apprehension that, should adverse circumstances prevent punctuality in his annual payments, the sacrifices already incurred will have been in vain. This Society cheerfully and with confidence points to the provision it has made for such cases, where help will be given, and every encouragement afforded to sustain the claims upon it unforfeited and uninjured.

To the young, the principles of this office will be peculiarly beneficial, the amount of premium being so trifling; while in the course of time the participation in the profits of this Society must return them such sums, that all they may have advanced in their early years will not only have passed again into their own possession, but a property established that will be of value during life, or a handsome bequest in case of death.

It is therefore hoped, by the establishment of this Society, to remove from men of letters and artists the reproach that in so many instances has attended them, to enforce a more ennobling appreciation of their worth, to prevent their becoming objects of charity, which humiliates as much as it relieves; and that, in the midst of their triumphs, and while in the possession of health, there shall not be seen in the dim perspective the almshouse or the prison.

NEW FEATURES OF THIS OFFICE, TO WHICH ATTENTION IS PARTICULARLY REQUESTED.

This office will introduce a system for obviating an acknowledged difficulty in the way of propagating the advantages of Life Assurance. In fact, the principal objection to adopt its blessings, even by many who thoroughly appreciate its value, is the possibility of forfeiting their policy by being unable to meet the payments when they become due; and, on the part of the offices, it has been an unwise, not to say an unjust, proceeding to compel a strict observance of this provision. It has been unwise, for the reason, that, by carrying out this measure to the letter, such enormous profits have arisen from it as to become unwieldy and useless; since the management of them engrosses such attention and trouble as to make the office careless of extending its business. It has also been unjust; for, instead of rewarding prudence and self-sacrifice by assisting, even for a while, such strenuous exertions for the accomplishment of a noble object, or by bestowing some equivalent for past privation, it passes by such virtue unrecognized and unrewarded, and thus perverts the very principle from which Life Assurance emanated. To remedy as far as possible this defect, there will be a fund instituted by the Athenæum, called the Provident Fund, to be raised by the mutual contributions of the members themselves, on the following original and beneficial plan:—

The first five hundred persons who desire to participate in this benefit will leave a tenth portion of their policies for the purposes of this fund, which will be thus applied:—

1st. To the keeping up the policies of such members who shall have previously paid five annual premiums. The aid afforded by this fund for that purpose will not be continued for a longer period than five consecutive years, and to be returned to the Society at the convenience of the assured, with interest at the rate of 25 per centum per annum, or the sum advanced may be deducted with such interest from the policy when it shall become a claim.

2nd. To grant small loans on the deposit of the policy to those members who may require temporary assistance.

3rd. To such qualified members who really need it, the Directors will have the discretionary power of granting such an amount as will purchase in the Society an Annuity, not exceeding £100, during the lives of themselves and widows; and

4th. To divide among the surviving members, at the end of twenty years from the date of the list being closed, the whole of the remaining and unapplied portion of the fund.

The rates of premium to secure these important advantages are lower than those in many first-class offices where no such privileges exist. For example, to assure £1,000 at the age of 30 in the Equitable would cost £36 14s. 3d. per annum; while a premium of £26 5s. in this office would assure, in addition to £1,000 the sum of £100 to the Provident Fund.

It is also determined to provide, as far as practicable, a similar fund for such of the original Shareholders as may become distressed, by applying a portion of the entire profits of the Society for such purpose.

One important feature of this society, and which has not yet been adopted by any other Assurance Company in this country, although generally in operation on the Continent, is the plan of granting policies made payable to the holder. The difficulty, expense, delay, and annoyance so frequently experienced in pecuniary transactions in the assignment of policies, have long been felt as a grievance; and the Directors of this Society, having given this subject much consideration, and acting under

the advice of competent legal authorities, are resolved to give the assured the option of receiving policies payable to the holder. The advantages of these policies must be obvious, as their simple construction will give greater facilities in their temporary or permanent transfer to a third party. This has been so fully appreciated on the Continent, that policies in any other form are absolutely refused by the great bulk of insurers. The publicity, so frequently annoying and detrimental, in the assignment and re-assignment of policies in pecuniary transactions, as well as the delay and expense consequent on the old system, have been so often complained of, that the Directors of this Society believe that the plan of making policies payable to the holders must eventually be generally adopted in this country.

A moment's reflection is sufficient to show that the great bulk of the middle and professional classes of this country stand as much in need of provision against the casualty of permanent sickness as against that of death; while statistical inquiries have proved that nearly 5 per cent. of the adult population of this kingdom are constantly incapacitated from following their occupations, and a great portion at advanced periods of life become permanently invalided. Therefore, to meet so important a desideratum, this Society will, on very moderate terms, grant Policies payable during the time of very long sickness, or when accident or any other casualty shall prevent the assured obtaining his livelihood.

To conclude, the Directors wish it emphatically to be understood, that there are no privileges or advantages in this Institution in which the public do not fully and equally participate, as the appeal is to them; and no benefit can accrue to any class, however worthy or respected, without the co-operation and support of all.

This is the only Society that issues Policies absolutely indisputable.

Claims paid immediately on satisfactory proof of death, and the exhibition of such documents as are required by law.

Seventy per cent. of the profits divided among those assured on the participating scale, thus securing all the real advantages arising from a Mutual Association, without incurring any legal or pecuniary liability whatever.

The first division of profits will take place at the end of seven years, and thenceforward every five years, and may be applied as a bonus, to be added to the sum assured, in reduction of future premiums, or in cash.

Diseased lives assured on equitable terms, the extra premiums being discontinued on restoration of the assured to permanent health.

Members of consumptive families assured at equitable rates.

Assurances may be effected from £50 to £10,000.

Endowment Assurances granted, payable to the Assured, should he live to a given age, or to his representatives should he die before.

Immediate and deferred annuities on very favourable terms.

No entrance fee charged.

The extra premiums for residence in foreign climates are lower than in other offices, and are founded on data.

Assurances may be effected in one day, the medical officer being in attendance.

Interest at the rate of 5 per cent. allowed on the paid-up capital.

Medical men remunerated in all cases by the Society.

A liberal commission allowed to all who introduce business.

HENRY SUTTON, Manager.

London: Printed by RICHARD RADCLIFFE POWD, of No. 26, Church-street, Old Kent-road, Surrey (at No. 10, Crane-court, Fleet-street, in the City of London), and published by him at the office, No. 17, Upper Wellington-street, in the Parish of St. Paul, Covent Garden, Westminster.—Saturday, September 27, 1851.



PRIVATE INSTRUCTION

PRACTICAL CHEMISTRY AND ANALYSIS.

Persons residing within a sixpenny ride of Oxford-street, who provide their own apparatus and materials, can be instructed at their own residences, by a Gentleman of considerable experience.

TERMS FOR ATTENDANCE OF TWO HOURS FIVE SHILLINGS.

The method of teaching is the same as that found so eminently successful at the London College of Chemistry; the pupil working for himself under the constant superintendence of the directors.

Address, prepaid, Mr. G. Caley, 3, Mortimer-terrace, Notting-hill, Kensington.

The Weekly News and Chronicle.—The Weekly

NEWS (founded as Douglas Jerrold's Weekly Newspaper), and the **WEEKLY CHRONICLE** (founded by Sir Henry George Ward), are amalgamated under the above title. A junction of the political strength of both will ensure to the cause of Reform an organ of superior influence, whilst their united literary resources will essentially aid the progress of general enlightenment. The established reputation of the one for official as well as general information, the high literary character of the other, and the political independence of both, will be fully maintained, so as to render the **WEEKLY NEWS AND CHRONICLE** one of the most complete mirrors of the world's doings, and one of the most faithful and vigorous exponents of public opinion.

(From *Mitchell's "Newspaper Press Directory"* for 1851.)

"WEEKLY CHRONICLE.—Principles: Liberal, advocating all measures which the conductors deem characteristic of genuine and healthful reform. This paper embraces in its comprehensive scheme News, Politics, Commerce, Literature, and Art. Whilst the Saturday edition is characterised by the variety of its contents, the Sunday edition gives the latest continental, provincial, and metropolitan intelligence; the court and ministerial movements, and those of the great political parties, forming distinguishing features.

"WEEKLY NEWS.—Principles: Liberal, advocating the progressive amelioration of the Masses, and the interests of Literature.

"Its leading political articles are eloquently and powerfully written and its literary reviews display an extensive range of knowledge, a rare scholarship, and great independence. Its contributors being men of experience and high repute, an essential value is attached to their opinions. There is a manly candour, an elevation of sentiment, and a polished tone about this publication which declare it to be the production of highly-gifted minds, and to be intended for the educated classes of society. Considered as a whole, this journal fully answers the title bestowed upon it by its able founder, and is one of the most useful and agreeable of this class of newspapers."

(From the *Cambridge Independent Press*.)

"LONDON WEEKLY NEWSPAPER.—It will be seen by advertisement that the **WEEKLY NEWS** and **WEEKLY CHRONICLE** have been amalgamated. Both papers have since their establishment, the one by Mr. Douglas Jerrold, the other by Mr. Ward, then Member for Sheffield, been conducted upon liberal principles, and are acknowledged to be first-class newspapers. The literary merits of the **WEEKLY NEWS** have established it as an unusual favourite in the circles of the literati; and the result of the combination of the two papers will be the production of one of the very best metropolitan journals extant."

(From the *Gateshead Observer*.)

"THE WEEKLY NEWS.—This ably-edited and sub-edited paper, from which we make frequent extracts, and of which we have more than once expressed our high opinion, is (as elsewhere announced) to be next week wedded to the **WEEKLY CHRONICLE**, a journal of great repute. We congratulate the 'happy couple' on their nuptials, and wish them every success, 'their patrons doubled, and their toils divided.'"

The **WEEKLY NEWS AND CHRONICLE**, price 6d., is published at No. 357, Strand, London.

The First Edition, on Friday Evening, in time for delivery by the Early Post on Saturday Morning throughout the provinces.

VOL. I.

Gutta Percha Carboys. The Gutta Percha Company

have been favoured with the following letter from

MESSRS. JAMES MUSPRATT AND SONS, OF LIVERPOOL.

(Copy.)

Liverpool, 8th September, 1850.

Gentlemen,—In reply to your favour of yesterday, we give it as our opinion that cool Muriatic Acid has no effect on the Gutta Percha. We have now had it in use for nearly a year, and we have no doubt, that in a short time, nothing but Gutta Percha will be used for conveying Muriatic Acid. For, although rather expensive at first, it soon pays for breakage and baskets of glass carboys.—Yours truly,

JAMES MUSPRATT AND SONS.

Every information may be had from the **GUTTA PERCHA COMPANY**, Patentees, 18, WHARF ROAD, CITY ROAD, LONDON.

Joseph Loader, Upholsterer and Cabinetmaker,

at 33, PAVEMENT, FINSBURY, LONDON.—The extensive celebrity of **JOSEPH LOADER'S** Establishment for twenty-five years, for all articles appertaining to the Upholstering business, affords a certain guarantee to all purchasers from his stock that whatever they may select will be of the most approved fashion and best workmanship, moderately charged.

A tasteful assortment, suitable to the decoration of the Dining, Drawing-room, Library, and Boudoir, is uniformly kept, comprising Chairs, Tables, Pies and Chimney Glasses, Chiffoniers, Drawers, Wardrobes, Carpets, Mattresses, and Bedding, at regularly fixed prices, corresponding with the wants or elegances of household economy, offered on terms which none can successfully compete with.

Joseph Loader's Portable Bedstead, which forms as ottoman settee, easy-chair, and bedstead, with three cushions, stuffed in printed cotton, on brass socket castors, £2. 10s. to £4. 10s.; and the celebrated

PATENT SELF-ACTING RECLINING CHAIRS,

that recline and elevate with the least possible trouble or difficulty to the occupier, the weight on the seat acting as a counterbalance to the back, by means of his Patent Self-adjusting Lever, requiring no rack, catch, or spring, to retain any required position.

J. L. also calls particular attention to his Patent Air-tight Bedsteads, carpeted and polished, at £1. 9s. and £1. 15s., equal to the most expensive Commodore, as well as the Patent Pedestal Washstands, marble top and fittings complete, particularly adapted for the office, surgery, or cabin.

PRESENT TARIFF.

	£ s. d.	£ s. d.
Solid Rosewood Chairs, French polished ..	0 15 0	each to 1 2 0
Sets of Eight Mahogany ditto ..	4 4 0	— 4 10 0
Gondola Easy Chairs (in leather) ..	1 8 0	— 1 16 0
Mahogany Lounging Chairs, carved throughout, spring stuffed, in Morocco, on patent castors ..	3 4 0	— 3 10 0
Couches, with loose squabs, all hair ..	2 15 0	— 3 15 0
Mahogany Loo Table, French polished ..	2 11 0	— 2 14 0
Rosewood ditto, on pillars ..	3 10 0	— 4 8 0
Rosewood Chiffoniers, with carved backs and marble tops, 3-ft., carved ..	3 5 0	— 5 0 0
4 ft. Carved Mahogany Sideboard, with drawers and four doors, Cellarets and Trays complete, French polished ..	4 18 0	— 5 15 6
Mahogany Dining Tables, with sliding frames, loose leaves, and castors ..	3 12 0	— 5 5 0
Mahogany Bedsteads, with cornices or poles, sacking or lath bottoms, polished ..	4 0 0	— 4 15 0
3 ft. 6 in. Elliptic Washstands, marble tops ..	2 12 6	— 3 12 6
Winged Wardrobe, with drawers in centres ..	8 10 0	— 15 0 0
Chimney Glasses, in gilt frames, 30 by 18, to 40 by 24 inches ..	3 1 0	— 3 17 0

* Shipping and Country orders promptly executed, and the customary allowances made in all wholesale transactions.

JOSEPH LOADER'S Establishment, 33, Finsbury-pavement, London, to whom it is requested, as a favour, that all letters may be addressed in full.

Descriptive and Illustrated Catalogues can be obtained on application.

Noirsain's Ventilating Grates and Stoves.—A long sought-for desideratum at last obtained. Great Economy in Fuel,—entire Prevention of Smoking in Chimneys,—and Perfect Regulation of the Temperature of Rooms, effected by the new Ventilating Grates, which may be applied to any fire-place.

M. NOIRSAIN solicits the attention of the public and scientific men to his patent apparatus,—the utility and superior advantages of which will be satisfactorily demonstrated at his Depot, 131, Regent-street, to any visitor. The highest testimonials given. Prices, from two guineas upwards.

Ford's Eureka Shirts and Ford's Eureka Shirt

Collars are not sold by any hosiers or drapers, and can therefore be obtained only at 185, STRAND. The Shirts are made in two qualities. The first is 40s. the half dozen, the second quality 30s. the half dozen.

Gentlemen who are desirous of purchasing shirts in the very best manner in which they can be made are solicited to inspect these, the most unique and only perfect fitting shirts made.

Price Lists, containing directions for self-measurement and every particular, are forwarded post-free, and the pattern books to select from, of the new Registered Coloured Shirting, on receipt of six stamps.

The COLLARS possess an improved method of fastening, which entirely dispenses with the use of strings, loops, or elastic contrivances, adapted to any size, suitable for once or twice round cravats, may be had in three different sizes, and either rounded or pointed. Price 11s. 6d. per dozen; two, as sample, sent post-free, on the receipt of 28 postage stamps.

RICHARD FORD, 185, STRAND, LONDON.

TO GENTLEMEN WITH TENDER FEET.

J. Chappell, 388, Strand, corner of Southampton-street, BOOTMAKER and PROFESSOR OF FITTING, invites the attention of such to his METHOD OF MEASURING, by which he guarantees to produce a Fit unprecedented for comfort, and combined with the most fashionable shape. Those Gentlemen upon whom Boot-makers have practised unsuccessfully are particularly solicited by J. C., who will undertake to fit them at once, however difficult. Established 1825.

LADIES' BOOTS and SHOES.—J. CHAPPELL respectfully informs Ladies that, owing to repeated applications, he has commenced the Sale of Ladies and Children's Boots and Shoes, of which an Assortment will be kept on hand.

EVERY ARTICLE WILL BE OF THE BEST QUALITY, AT THE LOWEST PRICE.

A supply of French Boots and Shoes will be received every month from one of the first houses in Paris. This department is carried on under the superintendence of Mrs. CHAPPELL.

FLOOR CLOTHS.

Best quality, warranted .. 2s. 6d. per square yard.
Persian and Turkey pattern 2s. 9d. do.
Common Floor Cloth. 2s. 0d. do.

INDIA MATTING, COCOA FIBRE MATS and MATTING.

Jannped Folding Screens, from 3s.

JOWETT, Manufacturer, 533, New Oxford-street.

Lamplough's Effervescent Pyretic Saline.—Dr.

Frout has characterized the discovery of it as apparently unfolding the germs of immense benefit to mankind, certainly of importance equalled only in the annals of medicine by those of the illustrious Harvey and Jenner.

To the intelligent but uninitiated in the art and mystery of medicine it is merely necessary to recal the fact that at one period all parts of the body were in a fluid state, and daily and momentarily since have derived their nourishment and support from the vital current—the necessity of keeping that fluid supplied with the stimulus which is the true cause of its action is most important, and must be apparent to all.

Dr. Yeoman, speaking of the Pyretic Saline, in the *People's Medical Journal*, 29th April, 1851, says, "For a cooling, refreshing, and wholesome spring or summer beverage, we know of nothing better than a tumbler of fresh water and a teaspoonful of this preparation. We speak from proved and personal experience, and cordially recommend our readers to test it in like manner."

Those who from choice drink water, or from necessity take that which has filtered through chalk, should use frequently the Pyretic Saline, to prevent the injurious consequences arising from its being surcharged with that substance. It has been proved, beyond all doubt, that these Salines are the means Nature uses to hold in solution the lime necessary to the formation of bone in the body,—hence a deficiency will account for gout, gall stones, and other painful affections.

In connection with these facts it is necessary to associate the name of LAMPLOUGH, Chemist, 88, Snow-hill, London, whose reiterated attempts during past years have been eminently successful in manufacturing the Pyretic Salines in an agreeable, cheap, and efficacious form, suited to all constitutions; for, like natural food, they assimilate with it, and are taken up by the absorbent vessels, diffusing themselves again through the system, thus supplying the continuous waste of natural secretions, however great or varied they may prove.

Prepared only at the Laboratory, 88, Snow-hill, and 1, New Farringdon-street, London. Established 1707.

To Chemists and Druggists.—Vinaigre de Bordeaux.

We invite your attention to this beautiful Wine Vinegar, as exclusively supplied by ourselves.

It is now become a standard article of consumption wherever the public have had an opportunity to appreciate it, and is approved by a wide connection.

W. and S. KENT and SONS, Upton-upon-Severn.

N.B.—For export from bonded warehouse ex duty.

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W. S. BUMSEY, Agent.

Liverpool Stores:—32, Horatio-street. Hull Stores:—77, High-street.

Sovereign Life Assurance Company.—No. 49, ST. JAMES'S STREET.

TRUSTEES.

The Right Honourable Earl Talbot, K.G., &c. &c.
Benjamin Bond Cabbell, Esq., M.P., F.R.S., F.S.A., Temple.
Henry Pownall, Esq., Spring-grove, Hounslow.
Sir Claude Scott, Bart., Cavendish-square.

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Sir Claude Scott, Bart., and Co., Cavendish-square.

AUDITORS.

The Hon. J. R. Drummond. Miles Milley, Esq.
Henry Luard, Esq., Manager of the Joseph Wilkinson, Esq.
London and County Bank.

The business of this Company is divided into three principal branches. First.—The Assurance of Life and all the ordinary transactions of Assurance Offices. Secondly.—The advancing an amount in connection with the Policy, and the effecting all pecuniary arrangements connected with Life Assurance. And, Thirdly.—The Granting Annuities (both immediate and deferred), and Endowments, upon a plan adopted only by this Company.

THE ASSURANCE OF LIVES.

The following are among the Advantages offered by this Company:—Tables of Premiums of Assurances, founded upon the most recent return and the combined experience of existing Life Offices, calculated, for the express use of this Company, at the lowest rates, consistent with perfect security.

Three-fourths of the Profits, or 75 per cent., divided, periodically, amongst the Assured; thus affording the security of a Proprietary Company, having a large subscribed capital, in addition to all the essential advantages of a Mutual Company, without the risk and responsibility attending that system.

Such profits may be made available in the three following ways:—by an immediate payment in cash; by addition to the policy; or, by reduction of the premium.

Participation in the profits derived from Policies granted in connection with Loans and Advances.

All Policies issued by this Company are indisputable; that is, the payment of a Policy cannot be disputed or delayed on account of any error or mis-statement in the proposal.

All inquiries as to age, health, habits, &c., are made before the proposals are accepted; the most accurate information being in each case required.

In cases of death by duelling or suicide, Policies which have been assigned are valid to the extent of the interest acquired, and if not assigned a proportion of the premiums received is returned.

Assurances effected for £50, and upwards, upon the payment of one single Premium; or of ANNUAL Premiums; or upon a limited number of payments, or on a gradually decreasing or increasing scale; or the premiums may be paid half-yearly, or quarterly, if more convenient.

The opportunity of obtaining an Advance in connection with the Policy, upon advantageous terms peculiar to this Company.

Assurances effected upon the participating scale, or, if preferred, upon a lower scale, without participation in the Profits.

Where the Assurance is for Life, as large a proportion of the premium as is consistent with safety to the Company allowed to remain on credit for Five Years, at the rate of £5 per cent.

Persons Assured so as to be entitled to the Amount of the Policy, either at a given age, say 60, or upon their death, should it occur previously to such age; thus, by the investment of a small portion of their incomes, securing a provision for themselves in their old age, or for their families, should they die before the specified period.

Persons Assured with this Company may reside in any part of Europe, without extra charge; and, if they have occasion to proceed to any other part of the world, can keep up their Policies upon payment of an increased rate, commensurate with the risk incurred; which extra rate will cease upon their return to Europe, in a good state of health.

No extra Premium charged on the lives of Military or Naval men, unless in actual service.

Whole-world Policies are granted to persons assuring the lives of others on payment of an extra rate.

No admission or entrance fee required, nor any charge made for the Policy beyond the amount of the stamp.

Parties desirous of discontinuing the payment of their Annual Premiums may dispose of their Policies to the Company, for a sum of money payable immediately; or, on surrendering them, may obtain a new Policy, without any further Annual Premium, for a sum to be agreed upon, payable at the death of the life assured. The person to whom such new Policy is granted may be entitled, in respect of it, to participate or not in the profits to be periodically distributed.

Claims paid three months after satisfactory proof of death, or earlier, upon rebate of interest until the specified time of payment.

Policies which have lapsed for non-payment of Premiums renewed upon payment of a fine; satisfactory proof being given respecting the health of the party.

H. D. DAVENPORT, Secretary.

ORIGINAL SERIES.

[As a pendant to the serial articles on Glass, by M. Bagnault, now completed, we copy the following excellent article on the same subject from "Newton's Repertory."]

GLASS AND ITS MANUFACTURE.

Amongst the mining and mineral products of the Exhibition, there is an unaccountable deficiency of specimens of fine sand, which, considering the vast importance of our glass manufactures, is much to be censured. From Lynn, in Norfolk, not a single specimen is contributed; and from the Isle of Wight but two exhibitors present themselves; although these are the chief localities whence the sand, so largely consumed in the manufacture of our various kinds of glass, is derived. The best-looking sample of sand shown in this department of the Crystal Palace is from S. Relf, Reigate, Surrey, and stands described in the official catalogue as "white sand from the Tunnel Caves at Reigate, usually called silver sand." Near it is another specimen, of almost equal apparent purity, from Reigate-heath, and exhibited by G. Morrison, agent to Earl Somers at Reigate. J. and W. Squire, of Yarmouth, Isle of Wight, next deserve notice; after whom, J. Claxton, from Alum Bay, Isle of Wight,—J. Lee, of Hartwell, near Aylesbury,—T. Smedley, from Landidno, and a few others, display samples of an ordinary commercial character. Those, however, who are interested in this subject will do well to pass at once to the eastern end of the building, and there examine a quantity of fine sand contained in the American department. This sand is from T. Gray and Co., Boston, Massachusetts, and is, beyond all question, the purest article of the kind ever seen in this country. Having been favoured with a small portion of it, we have had an opportunity of testing the amount of its metallic contamination, and find this so trivial as to be inappreciable; for 2500 grains of this sand yielded but .08 of peroxide of iron; whereas the same amount of British sand, of good quality, would have given at least one hundred times this quantity.

Before entering upon the manufacture of glass, it is, perhaps, advisable to explain the mode by which the analysis of sand may be effected without much loss of time or labour. In chemical works on this subject the means prescribed are extremely complex, and require no ordinary share of manipulative power; but, as the true object of the glassmaker is merely to ascertain the amount of metallic impurity, a complete analytical investigation is not only a great loss of time and trouble, but, to a large extent, superfluous and worthless. Hence the following simple mode of assaying sand may be practised by many who could never be prevailed on to attempt a regular analysis:—Having weighed out a portion of the sand to be examined, mix with it carefully one-tenth of its weight of pure and recently-heated lampblack; and then place the mixture in a green glass tube, so arranged in a small furnace that the portion containing the sand can be made red hot. As soon as this is the case, let a current of pure chlorine traverse the tube,—taking care to condense the resulting products in water, contained in a receiver attached to the other end of the tube, as is usual in such operations. By this means the oxides of iron, manganese, &c., are reduced to the state of volatile chlorides, and pass, with the excess of chlorine, into the receiver, where they are dissolved in the water, forming solutions, from whence the oxide of iron may be precipitated by ammonia, and the oxide of manganese by chloride of soda, or chloride of lime. The sand, under this treatment, becomes absolutely pure silicic acid, and is perfectly white when the excess of lampblack

has been burnt off in a muffle. It is not improbable that the muriatic acid so incessantly wasted in our soda works may one day be found applicable to the purification of glass-makers' sand; and thus the disagreeable tint of common glass will no longer interfere with its employment where colour is an object.

The position which Great Britain occupies, as regards glass, in the Exhibition is by no means satisfactory; for, in the highest branch of the art, we are immeasurably distanced by France. Due allowance must, of course, be made for the discouragement and hindrance caused by our late impolitic fiscal regulations, which have retarded, very seriously, the development of this manufacture, and have only recently enabled England to avail herself of the enormous advantages which she naturally possesses for glass-making. Prior to the abolition of the excise duty on this article, improvement was scarcely desirable; for any alteration in the process, however small, was certain to bring down an increased amount of official insolence and intermeddling on the part of the great fiscal harpy. Thanks, however, to the advancing knowledge of the day, the glassmaker is now unfettered, and a palace rivalling the most romantic flights of Eastern fancy proclaims the fact to an admiring world. But we are not quite certain that the British manufacturer has made, or is making, the most of his opportunity. On the contrary, it strikes us that he is placidly enjoying a self-sufficient mediocrity, and reposes too confidently upon that fluctuating foundation—the amount of his capital. He makes to sell, and abhors improvement until the article he makes becomes unsaleable. His ideas of competition turn always in the direction of price, and seldom or never voluntarily take the higher ground of quality. Hence it will be found, on examining the compartments of the Crystal Palace, that, if we excel at all, it is in the inferior or common kinds of glass; whilst in the better descriptions we are left lamentably behind. As in earthenware so in glass, and so in several other things, Great Britain manufactures for the million, but ignores the existence of a higher grade of consumers, and is dependent upon other nations for the development of real excellence. In window-glass, as might be anticipated, the English makers well sustain the character due to their country; and the great improvement which has taken place in this particular branch, since the repeal of the duty, reflects the highest credit upon such names as those of Chance and Hartley. With the repeal of the duty the old mode of making window-glass by the process called "flashing" virtually perished; and this of course necessitated the employment of workmen accustomed to the new method. Belgium and France were appealed to in this difficulty; and a very few years ago no English workman could be found to compete with these foreigners. Now, however, matters are much altered for the better; as may be seen on inspecting the enormous cylindrical glass shades displayed in Class XXIV. by Messrs. Chance, of Birmingham. These shades have been made by Englishmen; and, in respect to size and form, leave nothing to be desired. The glass itself is also of a good average quality in colour, and very free from air-bubbles, specks, and other imperfections; indeed, if successful competition with foreign producers be the only object of ambition amongst our window-glass manufacturers, that end has been unquestionably attained, both by Messrs. Chance and Co., and J. Hartley and Co. We hope, however, that something more is sought for amongst us; and hence part of the remarks which we shall offer, in regard to plate and flint glass, must be understood as having, though in a less degree, an allusion to window-glass.

So far as may be inferred, from the analysis of ordinary commercial samples of window-glass, this substance has not only a very variable composition, but, worse than this, it is out of all keeping with anything like definite proportion. That it should be full of striæ, and therefore refract the rays of light unequally, as it does, so as to produce the most hideous appearances of distortion, is a mere natural consequence of its mechanical composition, which might, and must, one day be corrected; but that whole nations should have come to view this defect as an unavoidable peculiarity is precisely one of those surprising facts which demonstrate the influence of habit over the powers of the mind, and show how easily human reason can reconcile itself to the most gross inconsistencies. If window-glass had one uniform atomic composition, the tendency to form these striæ would nowhere exist in excess; and therefore their production would diminish as the skill of the workmen increased; but, with the present variable compound, the glass stretches unequally in different parts by an equal application of force, and, in spite of human skill, presents a result alternately thick or thin, as accident determines. That these striæ have not the same composition as the parts surrounding them is very obvious, from the circumstance that, if striated glass be cut to a uniform thickness, and polished on both sides, the optical defects remain but little changed, and occasionally they are found to be increased. Again, it is known that the more complex the composition of any glass may be, the greater the liability to this striated structure,—of which flint-glass offers an opposite illustration; for here, in addition to the ordinary components of glass, the silicate of lead is superadded. Now, the specific gravity of silicate of lead is very high compared with that of silicate of soda, potash, or lime; hence, unless employed in the exact quantity to form a chemical combination with the other silicates, a mere mechanical mixture is produced, of very different densities throughout; and the product, under the action of light, displays, permanently, that peculiar, though fugitive, appearance seen when syrup and water, or alcohol and water, are mixed together: that is to say, a series of curved lines are formed by the unequal refraction of the two fluids, which entirely disappear so soon as perfect admixture has taken place, but which remain in the case of flint-glass, from the utter impossibility of effecting the necessary union between its various parts. Although, however, this cannot be done mechanically, yet, in a chemical way, nature performs such operations with ease and unerring fidelity. The French chemist Berthier long ago proved that many neutral salts combine together by fusion in atomic proportions, and form new and definite compounds. Thus, carbonate of potash and carbonate of soda, when mixed, atom for atom, unite, and produce a compound more easy of fusion than the most fusible of the two;—similarly, either of these carbonates will act with carbonate of baryta or strontia; and again, fluor-spar and sulphate of lime, two remarkably infusible substances, when mixed, melt readily, at a low red heat, into a fluid as mobile and transparent as water. It is useless to multiply examples of this kind, for thousands exist; and the alkaline and earthy silicates form no exception to this almost universal rule. A mixture of silicate of potash and silicate of soda will, if in atomic ratios, fuse much more readily than either of them alone. But now let us imagine an attempt to fuse these two bodies together, in any other proportion than that in which they are naturally disposed to combine;—say that the silicate of soda is in excess; then the silicate of potash would unite with exactly sufficient of the silicate of soda to produce the extremely fusible compound above spoken of; whilst the less easily fusible silicate of soda, added in ex-

cess, would form a kind of network throughout the mass. It may be said that a higher heat would overcome this difficulty, by thoroughly liquefying the silicate of soda; and this is really the plan now used with that view; but, independent of the fact that the mixed silicate of potash and soda would also undergo a corresponding liquefaction, and therefore favour the separation of the silicate of soda, yet, as chemical union is impossible, from the very conditions of the experiment, even the most perfect mechanical mixture, under the greatest advantages of fluidity, would never generate a homogeneous body. The striæ might indeed be diminished in size; but this would imply a corresponding increase in their number; and, if carried very far, complete opacity would result from such an endeavour to subvert the laws of nature. The power of the workman to remedy this defect is therefore limited to the capability of modifying its more salient features; he can neither remove nor destroy it. What we have here illustrated by the simplest of all assumptions gathers and accumulates into a formidable evil when several silicates are fused together, having considerable differences of specific weight. Thus, in the case of flint-glass before alluded to, there are generally three and sometimes five of these silicates fused together, into, probably, one of the most antagonistic compounds that could be conceived, refracting and dispersing the rays of light in fifty different directions, and demonstrating the unfriendly nature of its coerced union by flying in pieces from the most trivial applications of heat or violence. Yet in flint-glass we are not surpassed, nor indeed equalled, by any other nation; and so thoroughly has this beautiful substance become associated with our industrial reputation, that the name, flint-glass, has been adopted into several continental languages. Nevertheless, it cannot be doubted that a wide field of improvement is open in this quarter, and that some more solid foundation is needed by our manufacturers in this line than the prestige of a name, or the force of capital.

In our concluding remarks we shall point out the direction in which improvement is practicable; and at present it may not be uninteresting to examine the contents of the Exhibition in respect of this kind of glass. The display of goods by Messrs. Apsley Pellatt and Co. is alone sufficient to exhaust the entire subject of flint-glass; and the mere inquirer into this branch of manufacture need go no farther to get a perfect conception of the wonders that can be achieved by the manipulation of this material. The *coup d'œil* is certainly most beautiful; but, supported as it is and multiplied by the rival exhibitions of Messrs. Osler, Harris, Bacchus, Powell, Lloyd, and Summerfield, and a host of others, the effect is positively dazzling and gorgeous. At a distance sufficient to cover the faults of refraction, not even the diamond itself has a more pleasing appearance; and, indeed, the glass Koh-i-noor of Mr. Pellatt, displayed in the gallery, might be substituted for the real gem, shown in the main avenue, without the least risk of detection on the part of the million, or any great loss of brilliancy to the most practised eye, so perfect is the imitation. Is it not, then, to be deplored that science has had no hand in mingling its constituents together? But we must turn from this glittering assortment and descend to a lower level, where we shall find Great Britain in disgrace, and suffering severely from comparison with a rival, inferior in capital and natural resources, but conscious of power through the aid of real knowledge, and triumphantly asserting a claim to the supremacy in the very perfection of the glassmaker's art. The plate-glass of France casts that of England far into the shade. The productions of St. Gobain stand alone in the Exhibition; they have no competitors; and we are in a condition to prove that chemistry has done this. The

plate-glass of Montluçon too, adds, to the defeat. In examining the refractive aberrations of a mirror, the spectator will find his task facilitated by standing so that the rays of light from any geometrically-shaped body fall upon the glass, at an angle of 25° ; when, of course, they will be reflected towards his eye at the same angle. Now, gazing intently on the figure in question—and which, in the Exhibition, may be one of the parallelograms formed by the rafters of the roof—let him gently move his head from one side to the other. If the glass be of English manufacture, he will immediately perceive a tumultuous movement in the lines of the figure, as if this were subjected to an undulatory action,—the lines, before straight and parallel, become crooked and convergent in places, and minute objects lose entirely their outline and definition. In the case of the St. Gobain glass, shown in the French department, nothing of this takes place. As it can serve no good purpose to dwell upon each individual example of imperfection, we refrain from entering further into the comparative merits of the British exhibitors. They are all surpassed by the French makers, both in respect to uniformity of composition and fineness of polish. The St. Gobain Company having had the good sense to place a number of small samples of their glass for the acceptance of those visitors who may feel an interest in the manufacture, we have selected and analyzed one of these little squares, and shall presently detail the result; but our object in alluding to them here is, that glassmakers themselves may procure one of these specimens, and contrast it with a like morsel of English plate-glass. If the two be laid side by side upon any moderately light-coloured ground, and a distant object, as a chimney for example, be subjected to reflection, it will be found that, whilst the French glass gives a clear sharp outline, the English reflects either two or more images in a hazy and imperfect manner. There is no getting over this fact; and therefore improvement is imperative. The mode of making plate-glass being, so to say, identical in the two countries, the difference here remarked can arise from nothing else than a difference in composition.

In France, as in England, the ingredients are mixed with some care, and introduced into a crucible, heated by a powerful furnace. These ingredients are sand or silica, carbonate of soda, and carbonate of lime, with perhaps a little ground felspar in some cases. The carbonate of soda is first attacked by the silica, and its carbonic acid driven off, whilst the remaining silica and carbonate of lime become imbedded in the vitrifying mass. As the heat increases, a more perfect fusion takes place; and then the carbonic acid of the carbonate of lime makes its way through the fused materials, by which they are mechanically mingled together during the effervescence, which is technically termed the "boil;" and, provided no after separation ensues from the process of "settling," the whole crucible or "pot" of glass will have a uniform composition. But, as we have seen, this depends altogether upon the relative proportion of the materials towards each other; for an excess of either one or other of the bases will destroy the homogeneous character of the whole, and introduce a plexus of stris. Now, the plate-glass of St. Gobain is almost exactly an atomic compound, and consists of one atom of the trisilicate of soda and one atom of the trisilicate of lime, with a small per centage of alumina. The union is therefore complete; and when it is remembered that the celebrated French chemist Gay Lussac was regularly employed as an adviser to this company, and that his son, M. Jules Lussac, retains that appointment to this day, it is not very surprising that our manufacturers are defeated in the article of plate-glass. Science must ever take the lead of prejudice and custom.

The examination of English plate-glass fully corroborates the general effect deduced from the action of light. There is no approach to an atomic arrangement; the principal constituent is trisilicate of soda, but variable quantities of lime, alumina, and even magnesia, exist in it. Potash is sometimes present, and oxide of iron is invariably so; but in not one single instance, out of seventeen samples examined with great care, could so much as a suspicion of the doctrine of combining proportions be gathered from the result of the analysis. Similarly fruitless was a research instituted upon flint-glass, both British and Foreign. Of thirty-five samples analyzed, no satisfactory evidence was adduced to favour the opinion that science had been a helpmate to industry, or was at all concerned in this branch of manufacture. There are, however, some points of vast interest associated with the practical working out of this matter. Potash is known to give a more brilliant and harder glass than soda, and alumina seems to tend in the same direction. The Bohemian glass, so celebrated throughout Europe, is a glass of this description, and contains silicate of alumina, silicate of lime, and silicate of potash, but not in chemical proportions. This glass is therefore striated, as may be seen by examining that in the Austrian department; but it seems to permit of a more perfect decoration by metallic oxides than can be developed in glass of lime and soda. This very probably depends upon the alumina contained in it. From some singular oversight, the use of carbonate of baryta has not yet found its way into the composition of glass, though we can scarcely conceive a more hopeful material. This substance may be had in large quantity in the north of England, of great purity, and at a merely nominal cost as compared with its value for such a purpose as glass-making. That it would fuse readily with a due amount of soda, and give "a boil" as well as chalk, there can be no doubt; whilst its great density will certainly improve the refractive power of the resulting product, and thus rival the brilliancy of lead or flintglass, without imparting that softness and liability to receive scratches which are so objectionable in the latter variety. One difficulty may perhaps reside in the want of information concerning the quantity to be employed. But this is easily adjusted; for it has been demonstrated that, during vitrification, the silicic acid unites to bases in the proportion of three atoms to one: consequently, three atoms, or 138 parts, will always require one atom of each base. Therefore, this weight of good dry sand may be set against 54 of dry carbonate of soda, 70 of carbonate of potash, 50 of pure marble or chalk, 99 of carbonate of baryta, and 112 of oxide of lead or litharge. Suppose, then, that the object is to employ carbonate of baryta for the first time, here 6 atoms or 276 parts of sand, 1 atom or 54 parts of dry carbonate of soda, and 1 atom or 99 parts of carbonate of baryta, may be mixed and fused together with every prospect of obtaining a good result; or 9 atoms of silica, 1 of carbonate of potash, 1 of carbonate of soda, and 1 of carbonate of baryta, might be tried without fear of failure. Again, in the case of flint-glass, 112 of litharge, 54 of soda, and 276 of sand, would probably succeed; or an additional atom of trisilicate of potash might be used. For many years past, M. Dumas, now, perhaps, the first chemist in France, has been in the habit of demonstrating to his pupils that glass of all kinds, when properly made, must necessarily be an atomic compound; and yet we scarcely expect to find a single British glassmaker who will admit that his art is susceptible of such decisive and beautiful simplification.

To assist, as far as we can, in the attainment of this end, we shall proceed to describe a simple means for the analysis of glass, which will enable any person possessed of even very trifling chemical skill to determine the composition of

any given sample of glass in a comparatively short time. From the nature of the material, it becomes necessary to divide the analysis into two distinct portions: one of which has for its object the estimation of its alkaline ingredients; the other, that of the earthy metallic and siliceous matters. Having heated a sufficient quantity of the sample in question to dull redness, it must be suddenly thrown, whilst still hot, into a basin containing cold water. In this way it becomes cracked and flawed in all directions, so as to favour its reduction into powder. When dry, it must, therefore, be carefully ground in an agate or steel mortar, until it has the appearance of fine flour. Nor is it a matter of indifference whether this takes place in contact with water or not; for glass, in this extreme state of comminution, readily gives up a part of its alkali to water; and hence, if ground in the presence of that fluid, the resulting analysis would prove incorrect. But we will suppose that a quantity of fine powdered glass has been obtained as above indicated, and the amount of its alkali is desired; then weigh out 100 grains of the glass, and carefully mix with it 200 grains of pure fluor-spar in a similarly powdered condition. Place the mixture in a platinum or leaden vessel, and pour over it 500 grains of strong sulphuric acid,—stirring the whole well together with a silver spoon; but taking care not to remove any portion of the materials. Next, apply a heat of about 212° Fahr.; and, as the process draws to a conclusion, this may be raised as high as 300°. When all evolution of gaseous fumes has ceased, water may be poured on the residuary mass to the extent of four or five ounces, and the mixture thrown on a filter. After the clear fluid has passed through, a little more water must be added to the filter, so as to wash out the whole of the soluble matter; these washings being joined to the original clear fluid, which consists of sulphate of soda or potash, or both, with a quantity of sulphate of lime, and perhaps also of magnesia and alumina. To this an excess of carbonate of ammonia must now be added, to admit of the separation of the earthy salts being effected by filtration. The clear solution is next boiled down to dryness; and the residue is heated red hot for a minute or two. The residue is the soda or potash, or both, formerly contained in 100 grains of the glass, but now united to sulphuric acid. Having ascertained its weight, the relative proportions of potash and soda may be found by testing its content of sulphuric acid with a barytic solution, and calculating the result by the well-known Archimedean equation; or by dissolving the mixed salt in a small quantity of water, and, after adding an excess of tartaric acid, leaving the whole for a few hours covered up in a cool place: almost the whole of the potash will separate in this way as bitartrate of potash. The quantity of alkali may be determined from the atomic constitution of the alkaline salts. Thus, supposing the dry residue altogether composed of sulphate of soda, then, as 72 grains of it indicate 32 of pure soda, the result may be obtained by the rule of proportion. The amount of alkali being known, another portion of the powdered glass must be employed for ascertaining the remainder of the ingredients. That is to say, 100 grains of the sample must be mixed with 200 grains of pure potash, and the whole fused together in a silver crucible, at a red heat, until perfect liquefaction ensues, when the crucible and its contents may be withdrawn from the fire, and, as soon as cool enough, boiled in half a pint of pure water, so as thoroughly to dissolve the fused mass from the crucible. An excess of nitric acid being poured into the solution, the mixture is then evaporated to dryness, by which means the silicic acid is rendered insoluble; consequently, on the application of water, this remains, and may be dried and weighed; whilst the lime, alumina, and lead of

the glass may be separated from the soluble portion by the addition, first, of sulphuretted hydrogen, which separates the lead—then of ammonia, which throws down the alumina—and next, by pouring in carbonate of ammonia, which precipitates the lime as a carbonate. Thus, therefore, the alkaline matters are found by one process, and the silica, earthy and metallic constituents, by another, both of which may be conducted at the same time. It has been recommended to employ carbonate of baryta in the analysis of glass; but the high temperature required with this substance dissipates a portion of the alkaline components, and thus leads to serious errors. Even mere fusion in a glass furnace expels soda from glass, and renders it more and more infusible; but this expulsion is much favoured by the presence of baryta. The above method of analyzing glass is therefore to be preferred to the baryta plan by individuals not habitually engaged in manipulative chemistry. Until manufacturers adopt the custom of examining every specimen of glass they make, the chances of improvement are extremely limited; for success one day is constantly followed by failure in another, without any means of checking or controlling the manufacture. It is generally said that the best glass is made during cold weather, as at this time the furnaces give most heat, from the increased activity of the draught, through the augmented barometrical pressure. The assertion itself is most likely true; but the explanation of its cause leaves much to be elucidated, even if a higher heat prevails at the period in question. Admitting the beneficial agency of a high temperature, or “sharp fire,” as it is termed, this perhaps depends upon the sudden fusion of the materials before the carbonic acid of either of the carbonates has had time to escape: consequently, a much more active “boil” and thorough intermixture must occur under such circumstances than where this gas has been suffered to pass off in great part before fusion. This, however, would only diminish the individual size of the striae by multiplying their number; and such glass must, even under the most favourable circumstances, suffer greatly by comparison with that of St. Gobain. Nor can improvement be hoped for until, as in France, in this particular case, science is linked hand in hand with manufacturing industry. Since the grand discovery made by Dalton that Nature works in definite proportions, there can be no excuse for continuing to follow the doctrine of chance, with its occasional successes and frequent failures—the alternations of hope and despair. The laws which regulate the entire universe are not more immutable than those which tend to unite silica and soda in certain equivalent quantities; and man might attempt, with the same prospect of success, to arrest the annual revolution of the earth as alter even the very simplest of these atomic arrangements. It is, therefore, simply futile to battle with such a power; for, even when success seems on the point of attainment, we find Nature reasserting her dominion, and stamping those works of man which have been pursued in defiance of her laws with the indelible impress of imperfection and error.

That glass of all kinds may be made in this country quite equal to that of St. Gobain is saying no more than that Nature's laws are universal. But, remembering the great facilities we possess as a glass-manufacturing nation, the attainment even of such a result is but a sorry flight of ambition. We are placed in a position which demands from us something more than mediocrity or successful competition; as no nation in the world possesses the same amount of natural advantages. In fuel, in soda, in sand, in chalk, in litharge, we are naturally rich to overflowing; our capital and commerce give us the command of every

market; our manufacturers need only ask and have. So long as a miserable fiscal impost sat like an incubus upon the back of the glass-making interest, inferiority was unavoidable; but the humiliating aspect of the British plate-glass throughout the Great Exhibition is scarcely palliated by this excise reminiscence; and we refrain from terming it a national disgrace, only under a belief that already improvement has begun, which will thrust these specimens into the department of the past.

COMMERCIAL MANUFACTURE OF SULPHATE OF COPPER AND SULPHATE OF IRON, AND THEIR EMPLOYMENT IN THE ARTS.

(Continued from page 182.)

The next process to be described for the manufacture of sulphate of copper is that of subjecting oxide of this metal to the direct action of sulphuric acid. For this purpose the oxide of copper obtained in the nitric acid process of refining gold, by precipitation from the nitrate of copper formed in that process, may be employed; also the mixture of metallic copper and oxide, which, under the form of thin plates or scales, are obtained by hammering sheets of copper which have undergone the annealing process. These are technically called copper scales, and are collected by the coppersmiths for sale. The mode of obtaining sulphate by the employment of these scales is as follows:—Into a stout leaden vessel, or wooden vessel lined with sheet-lead, sulphuric acid of the ordinary chamber strength (about 1·700 sp. gr.) is placed, and steam blown in through a lead pipe, about an inch in diameter, dipping to the bottom of the vessel. To the heated acid copper scales are added until a saturated solution of sulphate is obtained, the steam being blown in throughout the operation; the mother liquors of previous batches are then added, and the whole run into wooden crystallizing-vats, lined with lead, placed in a warm room: a crop of crystals is thus obtained in four or five days. These crystals are then removed from the vats, and placed on drainers, formed of wood, lined with lead, having a false bottom pierced full of small holes, through which the drainage liquor passes into the lower part of the drainer, whence it is drawn off by a tap. The crystals, when moderately dry, are packed in casks for sale.

On the average somewhat more than one half of the copper scales employed are dissolved by the sulphuric acid; the residue, consisting of metallic copper, remains undissolved at the bottom of the vessel, and, having been washed and dried, is sent to the copper furnace to be melted. By this process 1400 lbs. of copper scales, and 1485 lbs. of sulphuric acid, sp. gr. 1·700, yield 2891 lbs. of crystallized sulphate of copper, with a residuum of 586 lbs. of insoluble metallic copper. The specimens of sulphate shown at the Exhibition by Pontifex and Co., and others, are thus made.

The second and third processes above mentioned yield a pure sulphate of copper; that obtained by the first process is liable to contain some of the impurities of the pyrites employed, but ordinarily to a small amount.

There is another source of sulphate of copper, the product of which is by no means pure, arising from the presence of a large portion of zinc, as well as sometimes small quantities of nickel, lead, arsenic, antimony, &c. This article, which should be termed *sulphate of brass*, is, for the most part, manufactured at Birmingham, and the name of agricultural sulphate of copper is sometimes given to it. The manufacturers of copper, and especially brass, wares abound in Birmingham and its vicinity; these use sulphuric acid, either alone, or in combination with nitric acid, as a "pickle" wherewith to cleanse the surface of these metals from any oxide which may adhere to their surface, by immersion in the acid liquor, previous to tinning, silvering, or gilding, as well as also before varnishing or lacquering the same; and, as most of the metal thus dipped is brass, the result is, that the "pickle," when it has become unfit for further use by being almost saturated with metallic oxide, is found to contain a

large admixture of zinc, to say nothing of other metals; hence the product obtained by the crystallization of this solution is of a much lighter blue than the genuine sulphate, and it is often the case that slender white needles of sulphate of zinc may be seen on the surface of the blue crystals.

The manufacturers also of sulphate of copper, by the direct action of sulphuric acid on oxide of copper, are apt sometimes to mix the contents of the "pickle-pot" with the genuine solution, and thus impair the purity of the product, taking care, however, not to add so much "pickle," as will serve to lessen the bright blue colour to such a degree as to lead to detection by the outward appearance of the sulphate. The analysis of this pickle, and of some of the "pickle-pot sulphate," we will give in a future number.

(To be continued.)

PROGRESS OF SCIENCE AT HOME AND ABROAD.—TRANSACTIONS OF SOCIETIES, COMMUNICATIONS, &c.

The liquid chloroform which first came into use solely as an anæsthetic agent is now found to possess a very widely-extended sphere of solvent action. Among the latest investigations relative to this matter are those of Mr. William Proctor, jun., who has proved it to be amongst our best solvents for cantharadin. Not only has the European blistering fly (*Cantharis vesicatoria*) been subjected to investigation, but the *Cantharis vittata*, or American blistering insect, and the *Myiabris cichorii* employed for that purpose by the Chinese.

Chloroform promises to become a powerful aid in certain branches of chemical analysis owing to the widely-extended sphere of its solvent properties. The following list of bodies thus amenable to its action will be useful to bear in mind:—

1. Resinous Substances.—Mastic, colophony, elemi, balsam of Tolu, benzoin, very soluble in the cold and in all proportions. The solutions would constitute useful varnishes were chloroform lower in price. Gutta percha is also soluble. Copal and caoutchouc likewise dissolve almost entirely, but more easily with heat. Amber, sandarach, and lac, are only partially soluble. Oilbarnum is scarcely soluble. Resins of guaiacum and scammony dissolve very well. Resin of pure jalap is insoluble. Gamboge and dragon's blood are partially soluble, forming, respectively, fine yellow and red liquids.

2. Fixed Fatty Bodies.—Oils of olive, cloves, almonds, castor, cod-liver, colza, neatfoot, linseed, euphorbium, lathyrus, croton, tiglium, lard, suet, the concrete oils of palm and cacao, and spermæti, dissolve freely. Wax is only partially soluble.

3. Volatile Oils.—All soluble in chloroform.

4. Non-metallic Elements.—Iodine and bromine soluble; phosphorus and sulphur sparingly so.

5. Neutral Proximate Principles.—Styracine, piperine, naphthaline, and cholesterine, very soluble. Picrotoxine sparingly soluble. Paraffine dissolves with the aid of heat, and is separated again on cooling. Amygdaline, phloridzine, salicine, digitaline, cynisine, urea, hæmatine, gluten, sugar, are insoluble.

6. Organic Acids.—Benzoic and hippuric very soluble; tannic sparingly; tartaric, citric, oxalic, and gallic insoluble.

7. Organic Alkalis.—Quinia, veratrin, emetina narcotina, strychnia, and brucia, soluble; morphia and cinchonia insoluble.

8. Salts of Organic Acids.—Tartar emetic, acetates of potash, soda, and lead, lactate and citrate of iron, and valerate of zinc, insoluble.

9. Salts of Organic Bases.—Sulphate and hydrochlorate of strychnia, soluble; sulphate of guinia, sulphate and hydrochlorate of morphia, insoluble.

10. Haloid Salts.—Iodide, bromide, cyanide, ferrocyanide, and chloride of potassium, chlorides of sodium and ammonium, iodide and cyanide of mercury, and iodide of lead, insoluble. Chloride of mercury soluble.

11. Oxy Salts.—Alkaline iodates, chlorates, nitrates,

phosphates, sulphates, chromates, borates, arseniates, and hyposulphites, quite insoluble. The same with nitrate of silver, sulphate of copper, and probably all oxy salts.

ON THE ACTIVITY AND INACTIVITY OF ACIDS IN RELATION TO POLARIZED LIGHT.

Whilst in the inorganic kingdom there is only one body, rock crystal, capable of acting upon polarized light (in causing the plane of polarization to diverge, one way or another), there are in the organic kingdom a great many bodies that possess this property. To the list of such, already sufficiently long, M. Pasteur has added two more. These are two new acids which, like analogous substances, are able to transfer their rotatory property to most of their combinations.

These two bodies are malic and aspartic acid, both elaborated by nature, the first in the berries of the mountain ash, the second in the ends of the asparagus.

M. Dessaigne had artificially obtained aspartic acid by distilling fumaric acid, which, in itself, does not possess the rotatory power; the aspartic acid thus obtained has not, according to the experiments of M. Pasteur, the rotatory property of the *natural* aspartic acid, whence he infers that aspartic acid has a *double* action on polarized light, one active, the other inactive, according to its molecular constitution. Chemically speaking, we can produce the same effect with the active acid and the inactive one; but, if we examine their crystalline forms, we shall perceive that, while at one time they are perfectly distinct and incompatible, at another they are alike, and present the same angles; only in this case the active substance presents hemi-hedric facets, which are never seen in the inactive one.

What has just been said of aspartic acid applies equally to malic acid.

Chemical Record

AND

DRUG PRICE CURRENT.

SATURDAY, OCTOBER 4, 1851.

ONE great characteristic of the present age is the absence of that mystery of learning which in past times was deemed a necessary concomitant of learning itself.

Places sacred to Minerva, haunted by educational genii near whose precincts the candidate for learning could not put his feet without being inspired,—are less implicitly believed in than heretofore; the world's appreciation of the acquirements of an individual is now beginning to be measured by what he knows, rather than by the fact of his education in this, that, or the other place.

The first public recognition of this principle was offered by the charter of the University of London; by the terms of which the candidate for a diploma was permitted to study where he liked; and was eligible for his diploma, provided only he manifested a competent acquaintance with the subjects of examination.

The London College of Physicians, formerly considered to be the archetype of all exclusiveness,—the most strenuous opponent of all change, has now so far yielded in deference to the modern principle, that no just ground exists for charging it with antagonism to the educational spirit of the age.

It is deeply to be regretted that the Pharmaceutical So-

ciety has so little profited by the experience and tendencies of other diploma-conferring communities that its provisions embody at this time one of the most objectionable principles of their antique educational system. It embodies the double functions of education and examination. The council of the Pharmaceutical Society assumes that the necessary means of imparting a sound pharmaceutical education exist in Bloomsbury-square and no where else; and thus the student who, from whatever cause, is unable to avail himself of a metropolitan sojourn, and attend the course of instruction at the society itself, is an unfit recipient of the society's diploma.

A scheme like this, opposed as it is to the curriculum of every other educational corporation of modern times, may well awaken doubts of its propriety,—doubts which are changed into realities when we come to examine the question in its own immediate relation to the specific peculiarities of the pharmaceutical body.

It must not be forgotten, then, that chemists' assistants enter their calling for the most part, as men of business, to secure the means of life. Few of them are sufficiently favoured by the means, either pecuniary or temporal, of enabling them to devote long consecutive periods to the purposes of professional education; few, therefore, are in a position to take advantage of a purely academic life. Instead, therefore, of imposing on every candidate for the Pharmaceutical Society's diploma the necessity of spending a considerable portion of his time in the metropolis, the council would have acted far more in accordance with the liberal spirit of the age,—would have far more efficiently subserved the interests of the chemists' assistants, by restricting the functions of the society to those of a mere examining board.

By this means not only would the greatest advantages be conferred on the greatest number, but we are satisfied the educational standard of the chemists and druggists would be considerably raised. That kind of chemical pharmaceutical learning which is acquired in a few months' attendance on lectures, and which shows itself in efforts of memory rather than of mind, is, after all, as far removed from the well-digested learning of tranquil half hours spread over the space of many years, as the valuable from the valueless.

Let us not be understood to depreciate lectures and oral instruction generally; they have their value, and it is great; but not great enough to warrant the sacrifice of time and means necessary for a prolonged metropolitan study, even were it impossible to attend lectures elsewhere.

There is, however, no necessity of the kind. Provincial schools of medicine already exist, having all the machinery in operation for imparting a sound routine of chemical and pharmaceutical education. Why should not the Pharmaceutical Society recognise attendance on these?

But a still greater recognition is due from the Pharmaceutical Society to the rising generation of chemists' assistants—a recognition of their rights to these tranquil half hours of which mention has been made,—a *recognition, in fact, of the propriety of early closing*, without which it may reasonably be doubted whether any educational scheme relating specially to the pharmaceutical body will ever lead to a satisfactory issue.

ANALYSIS OF THE PROPOSED PATENT BILL.

In our last number we demonstrated the impossibility of establishing a patent legislation on the basis of making the granting of letters patent depend upon considerations of novelty and utility. Appealing to the authority of the past in reference to some of the most important inventions—the only authority to which legislators on the subject can with safety refer—it was demonstrated that, if subjected to the preliminary investigation contemplated by the bill, the steam-engine of Watt, the application of gas to purposes of illumination, of electricity to telegraphic purposes, would all have been pronounced unworthy to be made the subject of patent protection.

Continuing our investigation of the scope and aim of the bill, we will now examine some of its details, and scrutinize the validity and the plea on which they were devised. The ostensible plea was a desire to free inventors from that exorbitant expenditure to which they are subjected by the existing patent laws; and which has the practical result of excluding a poor inventor from the benefits contemplated by patent legislation. A plea seemingly so just—so accordant with the wants and desires of patentees themselves, secured for the lapsed bill a number of supporters who would have been amongst its most strenuous opponents had its real tendencies been known.

That the existing amount of patent fees is vastly too great for the convenience of patentees themselves we hold to be a proposition so universally recognised, that it requires no argument from us; and that even their number, independently of expense, is needlessly discordant with the rapid tendencies of the present age, is an allegation to which none will demur. But the expense of obtaining letters patent, even under the present system, might be diminished nearly 75 per cent. without affecting the salary of any public officer—and the multifarious official steps of procedure might be curtailed to suit the requirements of the present age. This being done, it would be difficult to see the objections to the basis of the existing law. It is a very common mistake of inventors to imagine that the large fees paid for the obtaining of letters patent go to officials; a supposition which is so far from the truth that seventy-five fees out of the ninety-six go to the public purse.

The only officers at present receiving fees are the Attorney and Solicitor General, to whom £22 out of the money paid for every English patent are allocated—rather more for an Irish patent, rather less for a Scotch one. Now, the question determined by the Solicitor and Attorney General is that of similarity between the claims of a patentee and a party desirous of becoming one; a question which, under any system of patent legislation, would have to be determined—and the determination of which, probably, could not be entrusted to parties better qualified for the task than the law officers on whom it is now made to devolve. On the score, then, of the fees paid to officials, surely no objection can be urged: the remainder of the amount it is in the power of the Legislature at once to remove. Hence it is simply absurd to alter the principle of patent legislation on the score of expense.

According to the provisions of the new bill, the commissioners appointed to discharge the preliminary functions of

patent initiation were to have unlimited power of calling in professional evidence to determine the questions of novelty and utility; and were to have all patent documents removed from the Public Record-office, and consigned to their keeping. We fear the patentee would have little to hope for in the adoption of this machinery, either in the way of saving time, or expense.

Such was the outline of the bill at the period of its leaving the Upper House. As for the amendments, amplifications, and other changes it received in the Lower House, we cannot pretend to chronicle them. Suffice it to say, that from being a Great Seal job it became a Treasury job, and then returning to the Lords, they rejected it altogether. Inventors need not regret; their loss is but small.

Amidst the confused labyrinth of undigested principles so conspicuous in this bill, one peculiarity stands boldly forth:—namely, the heavy phalanx of commissioners, and their unlimited referees. Indeed we have good authority for stating that certain officials in the Crystal Palace were provided for by anticipation at the expense of patentees: also that the mutual connection between Lord Granville and a certain Glass House, with the shelved Patent Bill, admits of much clearer demonstration than does that of Tenterden steeple with the Goodwin Sands.

THE DISCREPANCIES BETWEEN OUR PHARMACOPŒIAS.

It is deeply to be regretted that the medical colleges of Great Britain and Ireland have not responded to a clearly-expressed desire of dispensers, and established an uniformity of composition between the more powerful mixtures of the several Pharmacopœias. It is to be understood that we use the term mixture in a chemical, not a pharmaceutical, sense; understanding by it all compounded substances not held together by chemical affinity. There are some who would even proceed farther than this in their advocacy of uniformity, and would have only one British Pharmacopœia. For our part, we doubt the propriety, as we are satisfied of the impossibility, of this course. Many galenical compounds are so familiarized to local communities by long usages, and perhaps also by a certain local applicability,—that to abolish or alter them would be scarcely less impossible than desirable; but surely no such argument applies to prussic acid, acetum colchici, acetum opii, and solutions of hydrochlorate or acetate of morphia; mixtures which before they can be given must be still further diluted, and consequently which might be referred to one common standard, under every possible condition of locality, custom, or climate.

Whatever danger may have existed in past times on account of this discrepancy of composition, it is evidently increased to a most alarming degree by the circumstances of rapid transit between the three kingdoms which railroads and steam navigation have brought about. It is no very pleasing reflection to cross the mind of a travelling valetudinarian that a prescription written in England would subject him to the chances of death were he to have it dispensed in Scotland or Ireland; yet such is literally the case, and is likely to remain so until some palpable mishap brings the whole subject under parliamentary consideration. As for the three Colleges of Physicians, they would appear to regard all intercommunication on the important subject of effecting

uniformity of Pharmacopœias as tantamount to a loss of dignity on their parts. Hence we do not look for the initiative to emanate from them, and fear that nothing less than a parliamentary effort will abate the dangerous evil.

REVIEWS.

THE PHARMACEUTICAL JOURNAL FOR OCTOBER.

Whether it be a condition of mental disquiet, occasioned by the anxieties of his legislative career—or whether it be pride of place, or simply negligence, we cannot say; but the editor of the *Pharmaceutical Journal* exceeds every past attempt in that peculiar walk of literature which is characterized by a daring use of paste and scissors. We complained a few weeks ago that he unscrupulously abstracted reports of the British Association from the *Athenæum*;—this month he has transferred to his organ whole pages from the official catalogue of the Great Exhibition; and nearly four pages are devoted to a subject very foreign to the requirements of chemist and druggist, namely, the manufacture of meat biscuits. Then Mr. Bell's readers are furnished with an extract,—a scissors extract we mean,—from one of the daily journals, of the county court proceedings between Professor Taylor and Mr. Vickers.

In fact, the only valuable part of the October number of the *Pharmaceutical Journal* is the advertisement sheet. This we have no doubt is valuable to Mr. Bell, and at the present juncture useful; but it would be difficult to say in what manner the readers of the journal can partake of its advantages.

SPECIFICATIONS OF CHEMICAL PATENTS.

The only two specifications since our last have both of them reference to improvements in the preparation of flax for the linen manufacture. Upwards of one half of the original flax fibre is at present reduced to *tow* by the old process, and a considerable loss is also sustained in the steeping or rotting process, employed to fit the fibre for the "scutching and heckling" machines. These losses are one great cause why linen goods cost so much more than cotton goods, although the raw material of flax is of less value than cotton; and when we mention that in 1850 we imported no less than 1,821,578 cwt. of flax, hemp, &c., in addition to that grown in Ireland and other parts of the British empire, the value of any new chemical or mechanical improvements will be fully appreciated. Some few months since M. Claussen patented a process for what he termed *cottonizing* flax, or converting it into a material having similar properties with cotton, and capable of being spun by cotton-spinning machinery. M. Claussen's process consists in steeping the fibre first in a dilute acid solution, and subsequently in a solution of carbonate of soda; by the action of the acid on the soda, carbonic acid gas is liberated, the elastic force of which produces a splitting of the fibre of the flax, converting it into a material which could scarcely be distinguished from the finest American cotton.

The bleaching agent employed by M. Claussen is the hypochlorite of magnesia. He states that out of the 96,098 tons of flax, the produce obtainable from 100,000 acres of land, only 38,606 could be obtained by the use of the most improved system of steeping at present employed; whereas by the cottonizing process 47,410 tons could be obtained, a difference of 8806 tons, which, at £60 (in round figures) per ton, would effect a saving of £440,250.

The following are the specifications of the two new patents enrolled a few days since:—

Henri and Alexandre Six, of Wasemme-le-Lille, temporarily of South-street, Finsbury, gentlemen, for improve-

ments in bleaching flax and hemp. Date of patent, March 24, 1851. Date of enrolment, September 24, 1851.

The patentees divide their improvements into four parts, as follows:—First, the employment of a continuous series of operations, whereby flax and hemp, in the state of straw, is subjected, whilst in the vat, to all the chemical operations which are usually employed in bleaching those fibrous substances, without changing their position until the bleaching operation has been effected.

Such is the leading feature of the inventors' specification; but subsidiarily to it a new form of hurdle on which the flax is exposed to the action of bleaching agents. In short,

The patentees claim:—First, the application of a continuous series of operations for bleaching the fibres of flax and hemp, direct and simultaneously, in the same vat, and without changing their primitive condition, either in the straw or before peeling, after they have been partly or entirely divested of the straw, or after being combed, as heretofore described. Thirdly, the application of hurdles, when operating upon flax that has undergone the operation of peeling and combing for spreading the matters, as hereinbefore described.

David Farrar Bower, of Hunslet, in the county of York, manufacturing chemist, for certain improvements in preparing, rating (otherwise called rotting), and fermenting flax, line, grasses, and other fibrous substances. Date of patent, March 24, 1851. Date of enrolment, September 24, 1851.

The object contemplated by the patentee is to diminish the time required for effecting the operations of preparing, rating, and fermenting flax, line, grass, and other fibrous vegetable substances, and to prevent the loss which arises in the usual mode of effecting these operations. In the ordinary process of preparing flax, after having been pulled and cleansed from the seeds, it is steeped for some weeks in water, to remove the glutinous and other matters contained in the fibres of the plant; this process, however, is not effectual, some of the glutinous matter remaining, and rendering the flax unfit for the subsequent operations of breaking and scutching, to which it has to be submitted in manufacturing linen yarn.

The patentee's improved process of rating is performed as follows:—The flax is steeped in either hot or cold water; if the latter, for six days, but if hot water be used a much shorter time is required; it is then passed between rollers, in order to remove the glutinous matter of the plant. The steeping process is then repeated, and the flax again pressed as before, and afterwards scutched in the ordinary way. The fibre thus obtained will be found to be much cleaner, and more free from gluten, than that which has been subjected to the ordinary steeping process.

For the finer qualities of flax, and for the purpose also of obtaining a still better colour, the fibre is submitted to the action of a solution of caustic ammonia, or the neutral salt of one of the alkalis, the chloride of sodium or the sulphate of soda being preferred.

The quantity of ammonia, or of the salt employed, is to be regulated by the temperature and purity of the water used in the operation. If, for instance, rain water be used, one pound of caustic ammonia, or one pound of any of the neutral salts of the alkalis, is to be added to 150 gallons of water, and the solution kept at a temperature of from 90° to 100° Fah. In the course of about thirty hours the operation will be completed. If cold water be used, the quantity of alkaline salt or of ammonia must be increased, and the operation continued for four days. The fibre thus treated, is next submitted to the pressing process before mentioned, for the removal of any dissolved glutinous matters. Another improvement consists in operating on the flax, &c., in an exhausted vessel. The flax, having been pulled and dried, and the seeds removed in the usual way, is placed in a cylinder or other shaped air-tight vessel, and the air is exhausted therefrom by means of an air-pump or other suitable contrivance; after which a solution of either caustic ammonia, chloride of sodium, sulphate of soda, or any other neutral alkaline salt is introduced, in the proportion of one pound of caustic ammonia or neutral salt to every 150 gallons of water

used, and the mixture kept at a temperature of from 90° to 120° Fah. The fibre readily absorbs the alkaline fluid, and in this saturated state it is allowed to remain from two to four hours, when the fluid is drawn off, and the vessel again exhausted of air. By the use of this exhaustion process the air contained in the cellular tissues of the plant is withdrawn, and the fibre more readily acted upon by the chemical agent.

CHEMICAL PATENTS RECENTLY EXPIRED.

F. Hoard, Deimerara, for improvements in making sugar. Expired Sept. 30, 1851.

T. Clark, M.D., Marischal College, Aberdeen, for improved apparatus to be used in manufacturing sulphuric acid. Expired Sept. 30.

For the information of our readers we extract the following list from "Newton's Repertory":—

LIST OF CHEMICAL PATENTS GRANTED FOR SCOTLAND, SUBSEQUENT TO JULY 22, 1851.

Daniel Towers Shears, of Bankside, Southwark, copper-merchant, for improvements in the manufacture and refining of sugar, being a communication. Sealed July 25.

Alexander Alliot, of Lenton, in the county of Nottingham, engineer, for improvements in cleaning, dyeing, and drying machines; and in machinery to be used in sugar, soap, metal, and colour manufacturing. Sealed July 31.

John Davie Morris Stirling, of Blackgrange, North Britain, for improvements in the manufacture of metallic sheets, and coating metals and alloys of metals; in metallic compounds; and in welding. Sealed July 31.

James Whitelaw, of Johnstone, Renfrewshire, engineer, for certain improvements in steam-engines. Sealed August 1.

Robert Oxland and John Oxland, of Plymouth, chemists, for improvements in the manufacture and refining of sugar. Sealed August 6.

Peter Robert Drummond, of Perth, for improvements in churns. Sealed August 6.

James Buchanan Mirrlees, of Glasgow, engineer, for certain improvements in machinery, apparatus, or means for the manufacture or production of sugar. Sealed August 8.

Joseph Mansell, of Red Lion-square, London, manufacturing fancy stationer, for improvements in ornamenting paper and other fabrics. Sealed August 8.

Alphonse Rene le Mire de Normandy, of Judd-street, London, and Richard Fell, of the City-road, London, engineer, for improved methods of obtaining fresh water from salt water; and of concentrating sulphuric acid. Sealed August 13.

David Farrar Bower, of Hunalet, in the parish of Leeds, manufacturing chemist, for certain improvements in preparing, rating (otherwise called rotting), and fermenting flax, line, grasses, and other fibrous substances.

Dominique Julian, of Sorgues, France, for improvements in extracting the colouring properties of madder, and in rendering useful the water employed in such processes. Sealed August 25.

George Jordan Firman, of Lambeth-street, Goodman's-fields, London, manufacturing chemist, for improvements in the manufacture of oxalate of potash. Sealed August 25.

Thomas Wilks Lords, of Leeds, flax and tow machine-maker, and George Wilson, director of the flax-works of John Fergus, of Prenalaw, Fifeshire, M.P., for a machine to open and clean tow and tow-waste from flax, and hemp, and other similar fibrous substances; and an improved mode of piecing straps and belts for driving machinery; and a machine for effecting the same, being a communication. Sealed August 27.

Richard Fletcher, of Blackdowns Farm, in the parish of Ebrington, Gloucestershire, farmer, for an improvement in obtaining motive power. Sealed August 29.

Henry Dirks, of Moorgate-street, London, engineer, for improvements in the manufacture of gas, in gasburners, and in apparatus for heating by gas. Sealed September 1.

NEW PATENTS SEALED IN ENGLAND WITHIN THE LAST SIX WEEKS.

To Pierre Armand le Comte de Fontainemoreau, of 4, South-street, Finsbury, in the county of Middlesex, for certain improvements in apparatus for gas-lighting, being a communication. Sealed August 8, six months for enrolment.

John Wallace Duncan, of Grove-end-road, St. John's Wood, Gent., for improvements in engines for applying the power of steam or other fluids for impelling purposes; and in the manufacture of appliances for transmitting motion. Sealed September 4, six months for enrolment.

Henry Alfred Jowett, of Sawley, in the county of Derby, engineer, and John Kirkham, of Peckham, in the county of Surrey, engineer, for improvements in hydraulic telegraphs, and in making signals. Sealed September 4, six months for enrolment.

Dominique Julian, of Sorgues, France, for improvements in extracting the colouring properties of madder, and in rendering useful the water employed in such processes. Sealed September 4, six months for enrolment.

Baron Charles Wetterstedt, of Grosvenor-street, Commercial-road, for improvements in preserving animal and vegetable substances. Sealed September 4, six months for enrolment.

William Imray, of Milton-road, Liverpool, for improvements in the manufacture of bricks, being a communication. Sealed September 4, six months for enrolment.

Benjamin Hallewell, of Leeds, wine-merchant, for improvements in drying malt. Sealed September 4, six months for enrolment.

Pierre Armand le Comte de Fontainemoreau, of South-street, Finsbury, for certain improvements in preserving animal substances from decay, by means of a composition applicable to the cure of certain diseases. Sealed September 4, six months for enrolment.

Gail Borden, jun., of Galveston, Texas, in the United States of America, manufacturer, for improvements in the treatment of certain animal and vegetable substances, to render them more convenient for use as articles of food, and for their better preservation. Sealed September 5, six months for enrolment.

John Rowland Crook, of Birmingham, in the county of Warwick, hatter, for improvements in hats, caps, and bonnets. Sealed September 11, six months for enrolment.

David Main, of Beaumont-square, in the county of Middlesex, engineer, for improvements in steam-engines and in furnaces. Sealed September 11, six months for enrolment.

William Jean Jules Varillat, of Rouen, in the Republic of France, manufacturing chemist, for improvements in the extraction and preparation of colouring, tanning, and saccharine matters from various vegetable substances, and in the apparatus to be employed therein. Sealed September 11, six months for enrolment.

Alexander Parkes, of Birmingham, in the county of Warwick, chemist, for certain improvements in the manufacture of copper, and in the separation of some other metals therefrom, and in the production of alloys of certain metals. Sealed September 11, six months for enrolment.

Frederick Hale Thomson, of Berners-street, in the county of Middlesex, Gent., and George Foord, of Wardour-street, in the same county, chemist, for improvements in bending and annealing glass. Sealed September 25, six months for enrolment.

Charles Watt, of Kennington, in the county of Surrey, chemist, for improvements in the decomposing of saline and other substances, and in separating their component parts, or some of them, from each other; also in the forming of certain compounds or combinations of substances; and also in the separating of metals from each other, and in freeing them from impurities. Sealed September 25, six months for enrolment.

GUM JULIF.—Gum Arabic 2 drachms, syrup of marsh mallows 1 oz., orange flower water $\frac{1}{2}$ oz., water 3 oz. This is a very soothing medicine in sore throat, tickling cough, &c.

PRICE CURRENT OF DRUGS, &c.

Articles having bd. or bond annexed are sold at short price exclusive of duty; when no duty is affixed the article is free. Add 5 per cent. to the duty on all articles excepting those having an asterisk prefixed. F. means foreign; B.P. British possessions.

DRUGS, &c.		Price.	
		£. s. d.	£. s. d.
ALKANET ROOTcwt.		1 14 6	2 10 0
ALOE, Barbadoes		1 10 0	6 0 0
Hepatica		1 10 0	5 0 0
Cape		1 5 0	1 18 0
ALUM, Britishton		7 10 0	8 5 0
Bochcwt.		1 0 0	1 4 0
AMBERGRIS, Greyoz.		4 8 0	7 0 0
ANCHOVIESdble. brl.		17 0 0	18 0 0
ANGELICA ROOTcwt.		1 0 0	1 5 0
ANNATTO, Flaglb.		1 0 0	1 2 0
Roll		0 10 0	1 0 0
ANTIMONY, Crudecwt.		1 8 0	0 0 0
Oreton.		19 0 0	0 0 0
Regulus Ops.cwt.		2 4 0	3 0 0
Bowls		2 15 0	2 13 0
ARROW ROOTlb.		0 2 0	1 0 0
ARSENIC, Whitecwt.		17 0 0	18 0 0
Red		0 0 0	0 0 0
English White		12 6 0	1 0 0
Yellow		19 0 0	1 0 0
ARGOL, Bolognacwt.		2 0 0	2 12 0
Florence White		2 0 0	2 3 0
Red		2 0 0	2 5 0
Naples White		1 18 0	2 5 0
Red		1 12 0	1 13 0
Sidly White		1 8 0	1 16 0
Red		1 8 0	1 10 0
French		1 14 0	2 7 0
Cape		1 15 0	2 11 0
ASPHALTUM, Egyptian		2 10 0	4 15 0
BORACIC ACIDcwt.		2 12 0	2 13 0
BALSAM, Canadalb.		0 9 0	0 10 0
Capavi		0 10 0	1 2 0
Fern		5 0 0	5 2 0
Tolu		3 6 0	4 0 0
BARILLA, Spanishton		0 0 0	0 0 0
Teneriffe		0 0 0	0 0 0
Sicily		0 0 0	0 0 0
East India		0 0 0	0 0 0
BARK, Peruvian, palelb.		1 6 0	2 6 0
Good		0 0 0	2 0 0
Mid., do.		1 1 0	1 2 0
Crown		1 3 0	2 2 0
Yellow, Flat		3 0 0	4 4 0
Quill		2 0 0	6 0 0
Red, Flat		3 0 0	4 6 0
Quill		1 0 0	1 15 0
Cascarillacwt.		8 6 0	9 6 0
Quercitron		3 0 0	14 0 0
Oak, Englishper load		3 0 0	6 5 0
Foreignper ton.		5 0 0	8 0 0
New S. W.		19 6 0	1 8 0
BERRIES, Baycwt.		7 6 0	8 0 0
Juniper, Italian		8 0 0	12 0 0
German		3 15 0	6 0 0
Turkey, Yellow		8 0 0	14 0 0
Peruvian, do.		5 0 0	16 0 0
BLACK LEAD, E. I.cwt.		10 0 0	1 5 0
Malaga		1 0 0	1 3 0
German		9 0 0	12 0 0
Dust		9 0 0	0 0 0
BORAX OR TINCALcwt.		2 17 0	2 18 0
E. I. Refined		3 10 0	2 12 0
English Refined		9 0 0	5 0 0
BRIMSTONE, Roughton		12 0 0	0 0 0
Roll		3 7 6	0 0 0
CAMPOR, Unrefinedcwt.		3 10 0	0 0 0
Dutch		1 0 0	1 1 0
* Refinedlb.		3 0 0	3 6 0
CANTHARIDES, bd.		7 0 0	13 0 0
CAPERS, Frenchcwt.		6 0 0	7 10 0
Capotts		2 6 0	3 0 0
CARDAMOMS, Malabarlb.		3 0 0	3 4 0
Long Longs		1 4 0	1 5 0
Ceylon		0 0 0	0 0 0
CASTOR OIL, Americalb.		0 2 0	0 5 0
E. I., bd.		15 6 0	1 5 0
CHILIES, E. I.cwt.		10 0 0	1 0 6
CHINA ROOT			
COCHINEAL, Honduras Blacklb.		3 3 0	4 10 0
Silver		2 10 0	3 7 0
Mexican Black		3 3 0	3 9 0
Silver		2 11 0	3 4 0
CORALlb.		0 0 0	0 0 0
COGULUS INDICUScwt.		1 4 0	1 5 6

F. 2d. per lb.

B. P. 6d. F. 2s.

5s. per cwt.

3d. per lb.

3d. .. B.P.

6d. per lb.

DRUGS, &c., continued.

Price.		£. s. d.	£. s. d.
COFFEE, Jamaica, triage and ord.		1 12 0	1 17 0
good and fine ord.		1 18 0	2 6 0
low to good middling		2 8 0	3 10 0
fine middling & fine		3 12 0	4 10 0
Demerara, triage & ord.		0 0 0	0 0 0
good and fine ord.		0 0 0	0 0 0
low to good mid.		0 0 0	0 0 0
Berbs, triage and ord.		0 0 0	0 0 0
good and fine ord.		0 0 0	0 0 0
low to fine middling		0 0 0	0 0 0
Dominica and St. Lucia, triage and ordinary		0 0 0	0 0 0
good and fine ord.		0 0 0	0 0 0
low to good middling		0 0 0	0 0 0
Ceylon, ordinary to very good ord. native		1 18 6	1 19 6
fine ord. to mid. plu.		2 4 0	2 14 0
good mid. to fine do.		2 16 0	3 15 0
Mocha, ord. & ungarbled		2 0 0	2 10 0
clean garbled ..		3 6 0	3 15 0
fine ..		4 0 0	4 15 0
Sumatra, Padang, &c. ..		1 17 0	2 0 0
Java ..		2 2 0	2 12 0
Mysore with certificate		1 18 0	2 10 0
Brasil, ord. to fine ord.		1 15 0	1 18 0
ex. fine plant. kind		2 0 0	2 15 0
St. Domingo ..		1 18 0	1 19 0
Havannah, ord. to g. ord.		1 18 0	2 0 0
fine ordin. to mid.		2 9 0	2 10 0
Cuba, ord. to good ord.		1 18 0	2 2 0
fine ord. to middling		2 4 0	2 15 0
Porto Rico ..		1 18 0	2 10 0
La Guayra ..		1 18 0	2 12 0
Costa Rica ..		2 0 0	2 12 0
COCOA, Trinidad, red ..		2 8 0	2 14 0
grey ..		1 16 0	2 2 0
Grenada ..		1 15 0	2 3 0
Para, St. Domingo, and Bahia		1 7 0	1 9 0
Guayaquil ..		1 11 0	1 12 0
COLOCYNTH, Turkey .. lb.		0 6 0	1 2 0
Spanish ..		0 11 0	1 6 0
COLOMBO ROOT		1 5 0	2 19 0
COFFERAS, Green, bc. .. ton		1 10 0	2 15 0
Blue ..		8 0 0	1 10 0
CREAM TARTAR, French ..		2 18 0	3 8 0
Venetian ..		3 5 0	3 8 0
CUBERScwt.		4 15 0	5 0 0
CUTCH		18 0 0	19 0 0
DRAGON'S BLOOD .. lump		2 10 0	9 15 0
Reed ..		8 0 0	14 10 0
DYEWOODS:			
Brasil ton		45 0 0	80 0 0
Barwood, Angola ..		0 0 0	0 0 0
Camwood ..		13 15 0	28 15 0
Fustic, Brasil ..		0 0 0	0 0 0
Cuba ..		8 10 0	9 0 0
Jamaica ..		4 0 0	5 10 0
Spanish ..		4 0 0	4 10 0
Zante ..		0 0 0	0 0 0
Logwood, Campechy ..		6 10 0	6 15 0
Honduras ..		5 0 0	5 10 0
Jamaica ..		2 10 0	4 0 0
St. Domingo ..		4 0 0	5 0 0
Nicaragua, Lima ..		14 0 0	15 0 0
solid ..		12 0 0	17 0 0
small and mid.		6 10 0	12 0 0
Red Sanders ton		4 15 0	5 15 0
* ESSENTIAL OILS ..			
Cloves, bd. .. lb.		2 8 0	5 4 0
Caraway ..		6 3 0	5 4 0
Lavender ..		3 6 0	7 0 0
Peppermint, bd. ..		4 0 0	11 0 0
Spike ..		5 6 0	5 9 0
Aniseed, bd. .. lb.		10 0 0	10 8 0
Cassia, bd. ..		0 3 0	0 4 0
Cayaput, bd. .. oz.		0 8 0	2 6 0
Cinnamon, bd. ..		0 2 0	0 4 0
Mace (expd.), bd. ..		0 4 0	0 5 0
Nutmegs, bd. ..		2 0 0	2 9 0
Bergamot .. lb.		7 0 0	8 3 0
Lemon ..		7 0 0	7 0 0
Orange ..		1 6 0	2 6 0
Rosemary ..		2 9 0	2 0 0
Thyme ..		13 6 0	1 0 0
Otto Roses .. oz.		1 5 0	0 0 0
Almonds .. lb.		14 0 0	1 4 0
GALANGAL ROOT, bd. ..cwt.		3 0 0	3 15 0
GALLS, sortscwt.		2 15 0	3 7 0
Green or White ..		4 12 0	4 15 0
Blue ..		3 10 0	5 0 0
E. I. Blue bd.		1 1 0	1 3 0
GENTIAN ROOTcwt.		1 5 0	1 0 0
GLUE, Best Towncwt.		0 0 0	0 0 0
Interior ..		1 10 0	2 5 0
Foreign ..		2 0 0	2 4 0
GUINEA GRAINS, bd. ..			

{ B.P. 4d. F. 6d. per lb.

nominal.

{ B.P. 1d. F. 3 per lb.

s. per lb.

1s. per lb.

5s. per cwt.

DRUGS, &c., continued.		Price.	
		£. s. d.	£. s. d.
GUTTA PERCHA lb.		0 8 0	0 10 0
GUMS:			
Ammoniac, Lp. .. .cwt.		9 6 0	1 10 0
Drop		1 15 0	3 15 0
Arabic, E. I.		1 0 0	4 12 0
Cape		12 0 0	1 3 0
Turkey, fine		8 10 0	10 6 0
Sods and 3rds		2 10 0	6 0 0
Australian		1 17 0	3 0 0
Barbary, Brown		1 15 0	3 10 0
White		3 5 0	3 15 0
Gedda		5 0 0	6 0 0
ANIMI, washed		5 0 0	12 0 0
scraped		6 0 0	13 12 6
Copal lb.		0 6 0	2 8 0
ASAFOETIDA .. .cwt.		10 0 0	4 10 0
BENJAMIN, 3rds		3 10 0	9 10 0
1st and 3rds		10 0 0	25 0 0
DAMMAR		1 10 0	2 6 0
GAMBOGE		5 0 0	11 12 6
GALBANUM lb.		2 10 0	3 0 0
GUAIACUM		0 6 0	1 0 0
MYRRH, E. I. .. .cwt.		2 0 0	10 0 0
MASTIC lb.		2 0 0	6 6 0
OLIBANUM .. .cwt.		8 0 0	3 0 0
SANDRACH		2 6 0	3 10 0
SENEGAL, garbled		3 0 0	4 0 0
TRAGACANTH, Picked		13 0 0	17 0 0
Sorts		3 10 0	10 0 0
LAC, Sticklac, Bengal		17 0 0	1 15 0
Siam, &c.		2 10 0	8 8 0
Shellac, Liver .. .cwt.		2 2 0	3 0 0
Ruby		2 5 0	3 10 0
Orange		2 5 0	2 16 0
Black		1 1 0	2 3 0
Blood		2 0 0	2 8 0
Seedlac .. .cwt.		1 0 0	3 0 0
HELLBORN ROOT .. .cwt.		1 18 0	0 0 0
HONEY, Fine lb.		1 8 0	3 0 0
ISLAND MOSS		0 24 0	0 2 0
INDIA RUBBER, solid		0 8 0	0 9 0
bottles		1 6 0	1 8 0
small		1 9 0	2 6 0
INDIGO lb.		4 2 0	4 7 0
Bengal, fine blue		6 0 0	6 4 0
good and fine violet and purple		5 6 0	6 9 0
ordinary and middling		4 7 0	5 0 0
good and fine copper		5 4 0	5 8 0
ordinary and middling		2 9 0	5 0 0
Consumers, good and fine		4 8 0	5 2 0
ordinary and middling		3 9 0	4 6 0
Java, good and fine		4 3 0	4 6 0
Oude, good and fine		3 3 0	4 6 0
ordinary and middling		2 2 0	3 2 0
Madras, good and fine		3 1 0	4 3 0
ordinary and middling		1 9 0	3 0 0
Kurpah, good and fine		2 6 0	5 6 0
ordinary and middling		2 0 0	3 8 0
Manilla good and fine		Withdrawn.	
ordinary and middling			
IPEROQUANHA lb.		4 4 0	4 5 0
ISINGLASS LEAF, 1st sort		10 0 0	13 6 0
2nd sort		9 0 0	10 0 0
Simovia		2 0 0	2 9 0
Siberia Purse		5 0 0	6 0 0
Short Staple, 1st		8 0 0	14 0 0
Long ditto		10 0 0	14 0 0
ISINGLASS, Brazil		0 6 0	5 6 0
JALAP lb.		1 4 0	2 3 0
JUICE OF LEMON gal.		0 10 0	1 0 0
LAC DYE, Fine lb.		1 8 0	2 4 0
Good		1 2 0	1 5 0
Middling		1 0 0	1 3 0
Ordinary		0 4 0	0 11 0
Lake		0 3 0	0 8 0
LIQUORICE Paste, Ital. .. .cwt.		3 5 0	3 12 6
Block		4 0 0	5 15 0
MADDERS, Dutch Crop .. .cwt.		2 8 0	2 10 0
Ombro		2 0 0	2 5 0
Gamene		1 5 0	1 10 0
Mull		8 0 0	12 6 0
French		0 0 0	0 0 0
Spanish		1 10 0	2 0 0
MADDER ROOTS, Turkey		1 6 0	1 10 0
MAGNESIA, English		2 0 0	2 2 0
MANNA, Flakey lb.		3 0 0	3 6 0
Silly		1 0 0	1 6 0
MUNJEST, E. I. .. .cwt.		18 0 0	1 2 0
METALS:			
IRON Bri. Cakes ton		84 0 0	0 0 0
Tile		83 0 0	0 0 0
Sheets lb.		0 94 0	0 0 0
Bottoms		0 10 0	0 0 0
Old		0 24 0	0 0 0
S. American ton		86 0 0	0 0 0
Foreign Cake		0 0 0	0 0 0
Foreign Tile		0 0 0	0 0 0

B.P. 5 F. 10s.

Public Sale Prices.

F 1 0 0 cwt.
BP 10 0 cwt.

per cwt. un-
wrought 4s.
B.P. 8s. 6d. F.
wrought B.P.
Old
S. F. 10s. old
B.P. 3s. 6d.
Old F. 7s. 6d.

DRUGS, &c., continued.		Price.	
		£. s. d.	£. s. d.
IRON, British Bars		6 5 0	6 15 0
Rods		7 0 0	7 10 0
Hoops		7 15 0	8 5 0
Sheet		4 7 6	4 12 6
Cargo in Wales Bars		3 0 0	4 0 0
Pigs No. 1 Wales		1 19 6	2 0 0
No. 1 Clyde		0 0 0	0 0 0
Russian .. .C.O.N.D.		0 0 0	0 0 0
F.S.I.		0 0 0	0 0 0
Archangel		0 0 0	0 0 0
Swedish		11 10 0	12 10 0
LEAD, British:			
Pigs ton		16 10 0	0 0 0
Sheet milled		18 0 0	18 5 0
Shot Pat.		19 10 0	20 10 0
Red or Minium		18 10 0	19 0 0
White		23 0 0	25 0 0
Litharge		19 0 0	0 0 0
Pig Spanish		0 0 0	0 0 0
American		0 0 0	0 0 0
STEEL, English		0 0 0	0 0 0
Swedish Keg		14 0 0	0 0 0
Faggot		15 0 0	0 0 0
TIN, Blocks		4 4 0	0 0 0
Ingot		4 10 0	0 0 0
In Bars		4 5 0	0 0 0
Banca bd.		3 19 0	3 19 6
Straits bd.		3 17 6	3 18 0
Peruvian bd.		0 0 0	0 0 0
Plates, p. bz. of 235 Sheets:			
No. 1 C 13 by 10 in.		1 4 6	0 0 0
1 X		1 12 6	0 0 0
1 XX		0 0 0	0 0 0
SPELTER on the spot ton		14 0 0	0 0 0
Delivery		14 2 6	0 0 0
ZINC, English Sheet		21 0 0	0 0 0
PLATINA ORE oz.		0 0 0	0 0 0
ORSEID lb.		0 0 0	0 0 0
MUSK, good and fine oz.		10 0 0	1 5 0
NUX VOMICA, bd. .. .cwt.		7 0 0	9 6 0
OILS—Imperial measure:			
Olive, Florence, 4 chest		15 0 0	18 0 0
Luca, jars		5 0 0	0 0 0
Gallipoli, 250 gals.		40 0 0	41 10 0
Spanish, ditto		38 0 0	39 10 0
Linseed cwt.		2 11 0	0 0 0
Rape, Pale		1 12 0	1 12 0
Brown		1 12 0	0 0 0
Cod ton		26 10 0	0 0 0
Seal, Pale		24 10 0	0 0 0
Brown, yel., and straw		31 0 0	34 0 0
Sperm		34 0 0	35 0 0
Head Matter		90 0 0	95 0 0
Whale, Greenland		0 0 0	0 0 0
South Sea		31 0 0	32 0 0
Cocoa Nut cwt.		1 10 0	1 15 6
Palm cwt.		37 0 0	38 0 0
OLIVES, French 4 bars .. 2 gals		3 0 0	4 0 0
Spanish, keg 2 galls.		2 0 0	10 0 0
OPIMUM, Turkey, bd lb.		2 6 0	14 0 0
Egyptian		7 6 0	8 6 0
ORONELLA, Angola ton		25 0 0	0 0 0
Cape de VerJ		25 0 0	35 0 0
Madeira		30 0 0	0 0 0
ORPIMENT, E. India lb.		0 8 0	0 0 0
ORANGE FLOWER water		5 0 0	0 0 0
Peel		5 0 0	0 0 0
ORRIS ROOT cwt.		1 18 0	2 2 0
PELLITORY ROOT lb.		0 6 0	0 0 0
PINK ROOT lb.		6 5 0	0 0 0
PITCH, British .. .cwt.		5 6 0	0 0 0
Archangel		7 6 0	0 0 0
Stockholm		12 0 0	0 0 0
Burgundy cwt.		0 0 0	0 0 0
PUMICSTONE, sorts ton		5 0 0	8 0 0
QUASSIA cwt.		6 0 0	8 0 0
QUICKSILVER lb.		3 4 0	2 6 0
RHATANIA ROOT lb.		0 5 0	0 0 0
RHUBARB, round		0 8 0	2 3 0
Flat		0 8 0	2 3 0
Dutch, trimd.		2 6 0	12 0 0
Russian		10 0 0	0 0 0
SACCHARUM SATURNI, bd. .. lb.		1 0 0	1 5 0
SAFFRON, Spanish lb.		10 0 0	10 6 0
*SAGO common cwt.		17 6 0	1 5 0
Pearl		17 6 0	0 0 0
Sago Flour		17 0 0	0 0 0
SAL AMMONIAC, E. I. .. .cwt.		1 10 0	1 12 0
English, Refined		1 18 0	0 0 0
SALTS, Glauber		6 6 0	7 0 0
Epsom		6 0 0	6 0 0
SALT		18 15 0	14 5 0
SARSAPARILLA, Brazil lb.		0 10 0	1 3 0
Honduras		0 10 0	1 3 0

6 0
0 0B.

10 per cwt.

5 0 p. cwt.

20 3 0 gall.
0 1 0 p. lb.

DRUGS, &c., continued.		Price.			DRUGS, &c., continued.		Price.		
		£.	s.	d.			£.	s.	d.
SARSAPARILLA, Vera Cruz	..	0	4	0	TALLOW:				
Jamaica	..	1	6	0	Graves	..	9	0	0
SASSAPRAS ROOT .. ton	10	0	0	0	Good Drugs	..	6	0	0
SAFFLOWER, E. I. .. cwt.	8	10	0	0	PRICES OF CANDLES, per doz.:				
Bombay	..	15	0	0	Mould Candles	..	6	0	0
SHUMAC, Malaga .. cwt.	12	0	0	0	Store ditto	..	4	6	0
Sierra Leone	..	14	6	0	TAMARINDS, West Ind. .. cwt.	1	5	0	0
Trieste	..	4	6	0	East Ind., bd.	..	12	0	0
SALTPETER, Rough	..	1	5	0	*TAPIOCA .. lb.	0	14	0	0
British, Refined	..	1	9	0	TEA: bd.				
Nitrate of Soda	..	14	9	0	Bohea, Canton, & Waping	..	0	6	0
British, Refined	..	0	0	0	Fokien	..	0	0	0
SOAMMONY, Smyrna .. lb.	5	0	0	0	Congou, ordinary and out	..	0	91	0
Aleppo, 2nds	..	10	0	0	of condition	..	0	91	0
fine	..	1	3	0	good ordinary	..	0	91	0
SEEDS, Aniseed .. cwt.	2	2	0	0	mixed blackish leaf	..	0	104	0
German	..	2	2	0	rather blackish leaf	..	0	11	0
E. I. Star	..	3	14	0	blackish leaf	..	0	112	0
Cumin	..	2	15	0	ditto rather strong to	..	1	01	0
Caraway, Foreign	..	19	0	0	strong	..	1	11	0
SENNHA ROOT .. lb.	0	6	0	0	Pekoe kind and flavour	..	0	11	0
SENNHA, Alexandria .. lb.	0	0	0	0	Ning Yung, fair to fine	..	0	9	0
Smyrna	..	0	0	0	Pouchong	..	0	9	0
East India	..	0	0	0	Caper, chests	..	0	0	0
Tinnevely	..	0	81	0	do. in 10 lb. Catty boxes	..	0	11	0
SMALTS, Saxony, FFFFE .. lb.	1	2	0	0	Campol, common	..	0	0	0
FFFE	..	1	7	0	good to fine	..	0	0	0
Danish, FFFFE	..	1	3	0	Souchong, ordinary to good	..	0	91	0
FFFE	..	1	3	0	fine	..	1	4	0
SWAKE ROOT .. lb.	0	4	0	0	Flowerly Pekoe, flat	..	1	0	0
SOAP, Naples, soft ..	1	6	0	0	fair to fine	..	1	6	0
Castile, hard .. cwt.	3	0	0	0	very fine and flowerly	..	3	4	0
British, Mottled	..	2	9	0	Black leaf Pekoe or Hong	..	0	10	0
Yellow	..	1	18	0	Musky	..	0	11	0
White	..	2	14	0	Orange Pekoe, faint & odd	..	1	0	0
Scented	..	0	0	0	common to fine plain	..	1	0	0
Windsor	..	0	0	0	common to fine scented	..	1	1	0
Oil	..	0	0	0	Twankay, common	..	0	10	0
Soft B. B.	..	1	0	0	good	..	1	04	0
B. S.	..	0	0	0	fine to Hyson kind	..	1	2	0
B. S.	..	0	0	0	Hyson Skin, common	..	0	10	0
SOBA .. ton	5	17	6	0	good to fine	..	1	0	0
ASHES, Canada Pot 1st. cwt.	1	10	6	0	Hyson, common	..	1	1	0
Pearl 1st	..	1	8	0	fair to good	..	2	0	0
United States Pot	..	0	0	0	fine	..	2	10	0
Pearl	..	0	0	0	extra fine	..	0	84	0
Soy, bd. .. gallon	4	0	0	0	Young Hyson, common	..	1	2	0
SPICES—					good to fine	..	1	2	0
Cassia Ligna, ord. to mid.	..	5	0	0	Imperial, common	..	1	5	0
good to fine	..	5	6	0	good to fine	..	0	8	0
Cassia Buds	..	5	0	0	Gunpowder, common	..	1	9	0
Cinnamon, Ceylon, 1st quality	..	1	6	0	good to fine	..	15	0	0
3d	..	1	0	0	TURMERIC, Bengal .. cwt.	15	0	0	0
Malabar	..	0	8	0	Java	..	10	0	0
Tellicherry	..	0	8	0	Madras	..	10	0	0
Ginger, Amboyne	..	0	7	0	TERRA JAPONICA .. cwt.	1	5	0	0
Bourbon & Zanzibar	..	0	54	0	Siam ..	..	1	2	0
Penang	..	0	10	0	VALONIA, Smyrna .. ton	18	0	0	0
Ginger, Bengal	..	15	0	0	Picked Morea	..	18	0	0
Malabar	..	16	0	0	VANILLA, Brazil .. lb.	1	5	0	0
Jamaica	..	2	0	0	Vera Cruz	..	0	9	0
Barbadoes	..	1	10	0	VERDIGRIS, Foreign	..	1	3	0
Mace	..	2	0	0	English	..	4	6	0
Nutmeg, brown	..	1	0	0	VERMILION, China .. lb.	5	0	0	0
limes	..	1	0	0	English	..	1	8	0
Pepper, bd. Malabar, heavy shot	..	0	34	0	VITRIOL, blue	..	1	4	0
light and half heavy	..	0	34	0	Foreign, white	..	1	4	0
Eastern	..	0	34	0	English, ditto	..	0	1	0
white	..	0	54	0	Oil of	..	5	17	6
long	..	0	0	0	WAX, Mogadore .. cwt.	5	17	6	0
Pimento	..	0	54	0	American	..	5	3	0
SPONGE, fine .. lb.	9	0	0	0	Russian	..	7	10	0
ordinary	..	1	0	0	Hambro	..	7	12	6
SPRITS OF TURPENTINE .. cwt.	1	14	0	0	East India	..	5	10	0
SULPHATE OF QUININE .. ca.	11	9	0	0	African	..	5	0	0
SQUILLS, dry .. lb.	0	1	0	0	White Hambro	..	7	0	0
undried	..	0	0	0	English	.. cwt.	2	0	0
SPERMACE, English .. lb.	1	4	0	0	Cape	..	5	15	0
American	..	0	0	0	West India	..	0	0	0
STARCH, English ..	9	6	0	0	WELD ..	..	0	0	0
Irish	..	0	0	0	WOAD .. ton	9	10	0	0
POTATO FARINA ..	14	6	0	0	WOOD, Sapan Bimas	..	8	0	0
TALLOW:					Siam ..	..	8	0	0
Petersburg, new	.. cwt.	1	19	0					
old	..	1	18	0					
Delivery last three months	..	1	18	6					
South American	..	1	15	0					
Odessa Sheep	..	0	0	0					
North American	..	0	0	0					
Australian	..	1	15	0					
Town Tallow	.. cwt.	1	19	0					
Fat by ditto	..	2	1	0					
Russian Candle	..	2	0	0					
Melted Stuff	..	1	9	0					
Rough ditto	..	18	0	0					

COLOURING FOR LIQUORS.—1. For brandy, &c.—Take half a peck of oak shavings, boil them for an hour over a gentle fire in 6 quarts of water. Add a pint of treacle to each gallon. 2. See Burnt Sugar, which is the best colouring for brandies, white wines, gravies, &c. 3. For pink liquors, such as one variety of champagne, curacao, &c., you may use either bestroot cut in slices, or a little tincture of cochineal. 4. Yellow.—Saffron and turmeric are both used for this purpose; be it observed, however, that both are of a very strong flavour. A solution of fustic or Persian berries are, therefore, sometimes to be preferred.

IMPORTS OF DRUGS, &c., INTO LONDON DURING THE WEEK ENDING WEDNESDAY, SEPT. 24.

THURSDAY, Sept. 25.—In the Baron Osy, from Antwerp.
6 cks. oil, 61 cks. 241 sheets zinc.
In the Diamond, from Cephalonia.
3500 lbs. fustic.
In the Ann, from St. Petersburg.
3077 ingots copper.
In the Shepherdess, from Bordeaux.
2 hhds. verdigris, 17 brls. cream tartar, 16 brls. essence turpentine.
In the Lee, from Palermo.
20 tons brimstone, 33 cks. tallow, 1457 bags shumac.
In the Sarah, from St. John's, Newfoundland.
298 cks. 7 cs. oil.
In the Phoebe, from Cronstadt.
1146 ingots copper.
In the Pirate, from Constantinople.
2 cs. otto roses, 2 cs. opium, 3 bxs. scammony.
In the Cornelia, from Columbo.
300 cks. plumbago, 47 bls. cinnamon.
In the Jabez, from Cronstadt.
1836 ingots copper.
In the Odessa, from Gamla Carleby.
2416 brls. 428 hf. brls. tar.
In the Arendal, from Jamaica.
1 cs. succades, 30 tons logwood, 263 brls. 11 tcs. ginger.
In the Protector, from Moulmein.
6895 bds. cutch, 103 slabs tin, 52 bgs. pepper, 588 bgs. teelseed, 630 pcs. sapanwood.
FRIDAY, Sept. 26.—In the Warrior, from Jamaica.
129 brls. ginger, 10 tons logwood.
In the Carrier, from Stettin.
80 tons spelter.
In the Gratitude, from Gottenburg.
1935 bars 13 bds. iron.
In the Bore, from Gefle.
4813 bars iron.
In the Industrie, from Dantzic.
1284 plts. spelter.
In the Leven Lass, from St. Kitt's.
377 brls. tous-les-mois, 7 cs. succades.
In the Pepita, from Seville.
1290 bars lead, 150 cs. liquorice paste.
In the Thomas Forrest, from Calcutta.
150 cs. castor oil, 250 bags saltpetre, 1200 bags 1000 pkts. linseed.
In the Africanus, from C.C. Castle.
179 cks. 59 srns. palm oil.
SATURDAY, Sept. 27.—In the Crusader, from Honduras.
1013 srns. cochineal, 28 tons logwood.
In the Zion, from Calcutta.
287 cs. castor oil, 1364 bags rapeseed, 825 bags 500 pkts. linseed.
In the Gloria, from Figueira.
17 cks. cream tartar.
In the Gwalior, from Manilla.
1896 pcs. 16 tons sapanwood.
MONDAY, Sept. 29.—In the Sibella, from Bombay and St. Helena.
5 cs. star aniseed, 10 cs. vermilion, 7 cs. vegetable oil, 105 cs. gum arabic, 62 cs. gum animi, 83 cs. gum olibanum, 20 cs. gum myrrh, 11 cs. gum cowdas, 25 cs. gum benjamin, 668 bags myrabolanes, 11 cs. gum cowrie, 27 bls. safflower, 6 cts. cowitch, 478 bgs. teelseed, 14 cs. nux vomica, 39 cs. cardamoms, 1290 bags pepper, 745 bags saltpetre, 10 cts. indigo, 122 bags linseed, 167 bags rapeseed, 21 bags turmeric, 29 bls. munjeet.
from St. Helena.
14 bls. 12 cks. copper.
In the Rockeliff, from Calcutta.
22,000 pcs. sapanwood, 209 bags turmeric, 1800 bags linseed, 600 pkts. rapeseed, 308 bags sticklac, 8 cks. lacdye.

In the Salcombe Castle, from Palermo.
30 tons brimstone, 20 cks. tallow, 1664 bgs. shumac.
In the Ada, from Jamaica.
11 kgs. tamarinds, 2 tons logwood, 5 cks. honey.
In the Eleanor Russell, from River Gambia.
387 cakes beeswax.
In the Citizen, from Rotterdam.
270 bags juniper berries.
In the Athens, from Cronstadt.
4206 pigs copper.
In the Edward Banks, from Havre.
21 cks. oil, 20 bls. cinnamon, 7 bars iron.
In the Aurora, from Galle and Columbo.
47 pps. cocoanut oil, 98 cks. 164 brls. plumbago, 4 cks. citronella oil, 26 bls. cinnamon.
In the Elizabeth, from Grenada.
7 bxs. nutmegs, 3 bxs. mace, 1 bx. cloves.
In the Alice, from Jamaica.
169 brls. ginger, 10 brls. pimento, 15 tons logwood.
In the Kate Kearney, from Bathurst.
239 bgs. gum, 106 cks. beeswax, 596 blts. redwood.
In the Hyperion, from Honduras.
70 tons logwood.
In the Munex, from St. Mary's.
612 cakes beeswax.
In the Odessa, from Petersburg.
280 cks. tallow, 2628 ingots copper, 1000 chtwts. linseed.
In the Hebe, from Jamaica.
12 tons logwood, 2 tons fustic, 10 bgs. pimento, 1 kg. tamarinds.
In the New Messenger, from Petersburg.
573 cks. tallow.
In the Leila, from Cadiz.
2 bakts. copperas, 2 cs. colocynth.
In the Lady Katharine Barham, from Jamaica.
65 brls. 25 tcs. ginger, 28 tons logwood, 7 tons fustic, 12 brls. beeswax, 195 bgs. pimento.
In the Amazon, from Calcutta.
3231 bgs. saltpetre, 300 pkts. linseed, 283 cs. castor oil, 43 cts. lacdye, 197 cs. shellac, 44 cts. indigo, 100 cs. gum.
In the Friends, from St. Petersburg.
200 cks. tallow.
In the Matchless, from Seville.
40 cs. liquorice, 6 brls. 56 kegs olives, 859 pigs lead, 772 qtls. lead ore, 100 cs. liquorice paste.
In the Duke of Wellington, from Sydney.
45 cks. sperm oil, 46 cks. tallow.
In the Chieftain, from Madras and Seringapatam.
8 cts. indigo, 150 bags ginzelly seed.
In the Havering, from Bombay.
143 cs. gum olibanum, 51 cs. ammo, 7 cs. myrrh, 3 cs. animi, 326 cs. arabic, 110 cs. ginger, 15 cs. beeswax, 20 cs. cardamoms, 1001 bags 98 pkts. pepper, 359 pkts. turmeric, 123 pks. nux vomica.
In the Helen Lindsey, from Madras, Calingapatam, Banpanpady, and Viragapatam.
4842 pcs. redwood, 20 pkgs. beeswax, 480 bags gingelly seed.
In the Nepaul, from Calcutta.
52 cts. lacdye, 50 bgs. saltpetre, 5 cts. indigo, 340 pkts. turmeric, 58 cs. castor oil, 903 bgs. rapeseed, 1385 bgs. linseed, 1200 pkts. mustardseed, 50 hhds. mustard oil.
In the John Edward, from Calcutta.
248 cs. castor oil, 17 cts. lacdye, 83 cts. indigo, 499 pkts. 500 bags. linseed, 500 pkts. rapeseed, 966 bags saltpetre.

19 tons logwood.	In the Zoe, from Jamaica.
470 slabs tin, 1903 bgs. 1925 pkts. rapeseed, 100 cs. laedye, 160 pkts. seedlac.	In the Hiero, from Calcutta.
60 brls. 287 kgs. 279 eks. plumbago, 10 brls. cinnamon, 608 pkts. pepper.	In the Aboakir, from Cochin and Colombo.
558 cs., 324 bags ginger, 100 bags oculus indicus, 1 cs. croton oil.	from Cochin.
156 brls. 3 tes. ginger, 3 tons fustic, 3 tons logwood.	In the Mountaineer, from Jamaica.
181 tes. 556 brls. ginger, 291 bgs. pimento, 18 brls. 5 cs. beeswax, 21 tons fustic, 5 tons logwood.	In the Cairo, from Jamaica.
Tuesday, Sept. 13. —In the Alexander, from Calcutta.	
820 bds.utch, 120 hhds. oil, 30 chta. indigo, 150 boxes castor oil, 63 chta. laedye, 1200 bgs. rapeseed, 80 bgs. saltpetre, 100 bgs. 760 pkts. tealseed, 850 bgs. poppyseed, 292 pkts. rapeseed.	
502 eks. tallow.	In the Cygnet, from St. Petersburg.
3820 plts. spelter.	In the Stag, from Stettin.
15 tons logwood, 18 tons fustic, 274 brls. 5 eks. ginger, 9 bgs. pimento.	In the Vestalladin, from Jamaica.
523 eks. tallow.	In the Superior, from Petersburg.
200 eks. turpentine.	In the Edward and Arthur, from Bayonne.
200 tons sulphur.	In the Venilia, from Girgenti.
10 tons fustic, 154 brls. ginger, 28 tons logwood.	In the David Lyon, from Jamaica.
10 eks. sperm oil.	In the James, from Bermuda.
1648 bars iron.	In the William, from Gottenburg.
75 tons logwood.	In the Albion, from Belize.
1264 ingots copper.	In the Castine, from Cronstadt.
1902 pigs lead.	In the Wilberforce, from Carthage.
50 eks. tallow, 1490 qrs. linseed.	In the Irene, from Petersburg.
14 srns. cochineal.	In the Director, from Callao.
632 cakes beeswax.	In the Champion, from River Gambia.
915 bls. tar.	67 eks. palm oil, 10 bags orchella.
848 bars iron.	In the Alrke, from Wase.
693 eks. tallow.	In the Elisa, from Gottenburg.
10 kgs. tamarinds, 56 brls. ginger, 7 bxs. succades, 9 bgs. pimento, 1½ ton fustic.	In the Reward, from St. Petersburg.
1 cs. opium, 11 eks. 100 chta. olive oil, 10 eks. boracic acid, 20 pks. argol.	In the Salopian, from Kingston.
135 cs. olibanum, 10 cs. animi, 22 cs. arabic, 500 bgs. linseed, 2023 bgs. myrabolanes, 64 brls. madder roots, 59 robins tamarinds, 200 cs. ginger, 100 bdls. oculus indicus, 5 cs. gum myrrh, 46 frassils senna, 15 chta. cardamoms, 700 bgs. rapeseed.	In the Hertha, from Leghorn.
32 tons brimstone.	In the Strada Parata, from Venice.
	In the Emily, from Palermo.

1099 bgs. shumac, a qnty. brimstone.	In the Spray, from Jaffa.
8 eks. colocyynth.	In the Elizabeth and Catherine, from Gottenburg.
1897 bars iron.	In the Raven, from Carthage.
2127 pigs lead.	In the Vesta, from St. John's, Newfoundland.
43 eks. cod liver oil.	In the Victorine, from Gibraltar and Faro.
40 tons antimony ore, 14 srns. brimstone, 342 brls. almonds.	In the Tom Cringle, from Stettin.
1545 plts. spelter.	In the James Rook, from Cronstadt.
200 eks. tallow.	In the Courier, from Malaga.
119 pigs lead, 517 brls. blacklead, 278 brls. nickel.	In the Lauzina, from Naples.
662 eks. tartar, 1 brl. bitumen.	
Wednesday, Oct. 1. —In the Myrtle, from Stettin.	
3483 plts. spelter.	In the Hannah and Eleanor.
5383 pcs. zinc.	In the Ceres, from Stettin.
75 tons spelter.	In the Express, from Gottenburg.
1806 bars iron.	In the London, from Cronstadt.
584 eks. tallow.	In the Pytho, from Petersburg.
160 eks. tallow.	In the Primrose, from Stettin.
50 tons spelter.	In the Mentor, from Petersburg.
690 eks. tallow.	In the King, from Cronstadt.
660 eks. tallow.	In the Cesarea, from Hamburg.
32 eks. cobalt ore.	

PUBLIC SALES OF DRUGS.

October 2.—By GEORGE BROOKS and J. CLAXTON.—150 chta. Arabic, 33s. to 35s.; 45 bales Alexandria Senna, 14d. to 24d.; 44 chests Turkey Opium, 7s. to 14s., bought in; 28 packages Scammony, 7s. to 28s., bought in; 10 cases Salep, £5 to £6. 7s. 6d., sold; 3 barrels Gum Mastic, 4s. 6d., sold; 5 cases Tragacanth, picked, £16. 15s. to £17; 13 cases Oil Peppermint, 10s. 3d. to 6s. 6d.; 4 chests Tragacanth, sorts, £7. 15s.; 24 cases Sponge, 9d. to 3s. 9d., bought in; 14 serons Ipecacuanha, 4s. 5d., sold; 9 cases Turkey Colocynth, 1s. 11d., bought in.

By SARGANT and TRUMPLER.—7 tins Vanillas, 20s., part bought in; 30 barrels Gum Guaiacum, 40s., bought in; 7 cases Dragon's Blood, £9. 8s., bought in; 1 case Vermilion, 4s. 7d., sold; 1 cask Angelica Root, 26s., bought in; 5 bales Valerian Root, 30s.; bought in; 40 cases Prd. Ginger, 9d., bought in; 30 serons Nux Vomica, 8s. 6d., bought in.

By LEWIS and PRAT.—14 chests Gum Animi, £9. 10s., part sold, £3. 5s. to £4. 10s., bought in; 14 chests and 2 bags Gum Myrrh, 40s. to 117s. 6d., part sold; 13 casks Gum Sandrac, 42s., 43s.; 5 chests Gum Tragacanth, 70s., bought in; 8 boxes Gum Copal, 1s. to 1s. 3d., bought in; 49 bags Pareira Brava, out; 4 cases Saffron, 23s. 6d. to 24s.; 20 bags Cubebs, 100s., sold; 9 boxes Vermilion, out; 64 bags Guinea Grains, 40s., 44s., out; 13 serons Orris Root, 21s., out; 5 bags Betel Nuts, 22s., sold; 2 casks Jamaica Honey, sold; 40 pkgs. West India Tamarinds, 22s. to 44s., sold; 10 cases Rape Oil, 29s. 6d., sold; 5 cases Vegetable Oil, 24s.; 6 cases Cinnamon Oil, 1s. 3d. to 2s. 4d.; 1 case

Oil Roses, 5s.; 1074 bags Castor Seed, out; 3 casks Cream Tartar, 56s. to 64s., sold; 49 bales Madder Root, 34s.; 114 bags Myrabolanes, 6s. to 6s. 6d.; 25 bottles 2 cylinders Otto Roses, 17s. to 17s. 6d.; 17 chests East India Gum Arabic, 25s., part sold; 5 casks Gum Copal, 42s., sold; 5 bags Wormseed, out; 19 bales Sarsaparilla, 1s. 3d., part sold; 1 tin Grain Musk, 47s.; 7 packages Brazil Iainglass, 1s. 3d. to 3s., sold; 5 bags Cape Argol, 40s. 6d. to 48s., sold; 29 chests Shellac, 43s. 6d. to 44s.

By D. GRAY.—238 gourds Barbadoes Aloes, 75s., 120s., out; 27 cases Cape Aloes, 33s. to 38s., sold; 20 cases Rhubarb, round, 1s. 1½d. to 1s. 6d., sold; 21 cases Gamboge, £7 to £10. 10s., out; 11 cases Dragon's Blood, 9s. to 9s. 10d., out; 15 cases Gum Benjamin, £6. 7s. 6d. to £9. 2s. 6d., sold; 6 cases Oil Peppermint, 10s., out; 2 casks Cream Tartar, 60s.; 60 pockets Coculus Indicus, 21s. to 25s.; 18 bags Nux Vomica, 8s. to 8s. 6d., sold; 18 bags Gum Senegal, 70s., out; 15 chests Shellac, 43s., sold; 32 chests Gum Animi, 40s. 6d. to £9. 7s. 6d., sold; 3 chests Gum Myrrh, £6. 15s., sold; 2 cases Oil Cassia, 10s. 3d., sold; 10 boxes W. I. Cayenne Pepper, 7s., sold; 7 packages Gum Copal, 1s. 7d. to 1s. 9d.; 21 bags Fennugreek Seeds, 12s.; 9 bags Coriander Seeds, 16s.; 5 bags Aniseeds, 40s.; 1 chest Gum Olibanum, 10s.; 20 bales E. I. Senna, 4d., sold; 48 barrels Plumbago, 8s. 6d. to 10s.

ELLIS and HALL.—66 serons fine Honduras Sarsaparilla, 1s. 8d. to 1s. 9d., out; 8 casks Gum Sandrac, 61s. to 71s., sold; 149 bags Coculus Indicus, 12s. to 25s., sold; 10 cases Castor Oil, 4s. 6d. per doz.; 42 bottles Cajaputa Oil, 3½d., bought in; 5 cases Citronelle Oil, 4d. to 6d., sold; 2 tins Essential Oil, out; 14 casks Cod Liver Oil, 6s., bought in; 6 cases Oil Aniseed, 5s. 9d.; 3 cases Oil Sassafras, 3s. 3d.; 2 chests Dragon's Blood, £9; 2 chests Gum Myrrh, 117s. 6d., sold; 4 cases Cape Aloes, 33s., sold; 3 cases 15 bales East India Senna, out; 21 bales Alexandria Senna, 2½d.; 8 bags Colombo Root, 25s., sold; 1 tin Assam Musk, 25s. to 45s.; 45 ounce caddies China Musk, 16s. 6d.; 8 bags Caroteseed, out; 2 bundles Seeds, out; 3 bundles Bark, out; 20 barrels St. Vincent Arrowroot, 4d. to 4½d.; 14 barrels Bermuda Arrowroot, 1s. to 1s. ½d.; 3 serons Ipecacuanha, 4s. to 4s. 5d., sold; 18 chests Turkey Arabic, 105s.; 3 jars Honey, 6d.; 4 bales Turkish Madders, 1s. to 5s.; 12 boxes Spermaceti, out; 20 chests Gum Damar, 46s. to 46s. 6d., sold; 25 barrels Gum Thus, 10s., bought in.

TO THE EDITOR OF THE CHEMICAL RECORD.

Sir,—Having the recollection before my mind of the interesting series of well-attended evening meetings which took place last winter, under the presidency of Mr. Smee, at the Pharmaceutical Society, I am the more deeply disappointed to find that no arrangements have been made to conduct a similar series for the forthcoming session, which is proven by the facts that the usual period has elapsed for their commencement, and no notification has been given for their future assembling.

To suppose that there is a dearth of materials and talent amongst the members would belie the last season. At whose door, then, may it be asked, lies the blame for no efforts having been made to give us the benefit of these materials and talents during the ensuing season? Is it that the present president is supine on these matters, or that Mr. Redwood is refractory, or too much occupied with his well-paid multifarious engagements, to find leisure for that which does not involve directly a pecuniary recompense? The president and the council may be able to answer these questions, but whether they answer or not, publicly, one point is certain, viz., that they are responsible to themselves for the misconduct or negligence of their servants. The fact is painfully and palpably evident, with reference to the past history of this institution, that the interest thereof has been invariably and studiously sacrificed to the benefit of certain individuals by the same members of the council who, unfortunately for the welfare of the society, have possessed too much influence and a misplaced confidence therein. As an apt illustration of this truth, the case of Mr. Redwood may be cited. At the commencement of the movement

which gave rise to the Pharmaceutical Society, this pharmaceutical pluralist was on his last legs, casting about for a god-send. Being ambitious of entering public life without possessing the necessary qualifications, he had more than once sacrificed his bread and cheese obtained by plodding in trade to the attainment of this object without success. But having a strong faith in the lines of Shakspeare, "that there is a tide in the affairs of men which, if taken at the flood, leads on to fortune," he made another attempt, which was eminently successful, under very propitious circumstances.

After the society was established a library and museum were thought necessary adjuncts thereto. By the liberality of the members these valuable features of the society were built up, and in consequence a librarian and curator of the museum became necessary. By the influence of his patron Mr. Redwood received these appointments, at a salary of 100 guineas per annum, without any apparent prospect of securing farther emolument from the funds of the society. Had he and his patrons rested satisfied with doubling or even quadrupling his duties and his stipends, no objection could have been mooted had he been qualified for the positions created for him. But mark the sequel how from a humble beginning a great position is acquired. I shall not trespass on your columns by a recital of the means that were employed to achieve this great position for a man "so varied in his talents and capabilities that he seemed to be not one but all mankind's epitome;" but sufficient to say that Mr. Redwood was subsequently appointed, with good salaries, in addition to the offices of librarian and curator of the museum, professor of pharmacy, director of the laboratory, sub-editor of the journal, professor of chemistry, and besides performing sundry duties connected with the society, as well as those related, to the intense satisfaction of his patrons, who only regret that they cannot dispose of the secretary in some decent manner to appoint him to that office also.

It should not be forgotten that so powerful is the influence of his patrons, and so great his mental and physical abilities, that he enjoys through their instrumentality the offices of secretary to the Cavendish and Chemical Societies, besides being the editor and compiler of several profitable works on pharmacy, inventor and patentee of a process in metallurgy, and performing many other feats too numerous even to be remembered or mentioned. In fact, it may be said of him, as it is written of the elephant's trunk, that he can, when paid for so doing, pick the minutest pin from off the ground, or tear a lofty tree from its roots.

Here, I think, has enough been said to prove that there will be no more evening meetings, unless Mr. Redwood be paid for getting them up; therefore I recommend this affair to the notice of his patrons in the pharmaceutical council.

In conclusion, sir, may I ask you to devote a portion of your columns to a statement of the complaints that a large majority of the members have to make against the mismanagement of the Pharmaceutical Society, for we cannot make our wrongs known, or get a chance of redress, except through the aid of some journal like yours which circulates amongst the members? Don't refer us to Bell's journal, or "ours," as we were wont to call it, for therein is death to the knife for our hopes and wants. It is irrecoverably gone over to the enemy, I fear; thanks to the council. Is there no punishment for the traitor? Are the council afraid of one man and his parasites? As for Bell's bill, every body knows it was a feint to drive us from another object.

Yours, &c., G. W.

OUR GLEANINGS.

The council of the Pharmaceutical Society has determined on allowing members and associates to attend the society's lectures gratuitously. It is only a matter of justice to estimate things at their true value. The step deserves commendation.

Some little difference of opinion exists in chemical circles relative to the late county court prosecution of Mr. Vickers, by Dr. A. T. Taylor. Mr. Vickers, the defendant, is an

isinglass importer, and, having reason to believe that his trade was injured by adulteration of the article, he employed Dr. A. T. Taylor to undertake certain analyses. The time thus occupied was no less than six weeks, and during the period various consultations took place. For all these services rendered Dr. Taylor claimed a fee of £43. 10s., a claim which the defendant disputed, but which was confirmed by the judgment of the county court. Surely £43. 10s. is a sum little enough for six weeks of a professional man's time; we wonder two opinions can exist in the matter.

Now that a steam communication between England and Australia will so soon be established, a competent supply of ore discovered from these regions is a matter of increased importance. On this subject Mr. F. G. Moore, giving his evidence before a select committee of the House of Commons, said he had been ten years resident in New Zealand, and had made many voyages out to India and Australia; part of the time as commander. Letters for New Zealand go to Australia first, and, owing to the want of steam communication, often lie in Sydney for months. There is a good trade springing up between New Zealand and Sydney in wheat and farm products. The return trade is passengers, cattle, and horses. Emigration to New Zealand is increasing very rapidly. The population is now about 37,000, exclusive of upwards of 100,000 natives. Auckland is the seat of Government, but is not the mercantile capital. Cook's Straits is the most central part, and has the principal mercantile settlements on it, such as Wellington and Nelson. Witness was the first discoverer of coal in New Zealand, at Wanganui, west entrance of Cook's Straits. Coal is also being worked at Auckland and Nelson. That from Nelson has been tried in H.M.S.S. *Inflexible*, Captain Hoesason, and favourably reported on. You have not to sink a shaft: the coal crops up for miles and miles. Some of the veins are ten feet thick. It can be shipped on board for 20s., perhaps cheaper now. "The labour is so much more expensive there than it is here; and when I left there was no regular system of working it; it was got by the sailors. The sailors used to go and help themselves. They used to lay the ship ashore, in the bed of the river; and when it was low water they used to dig up the coals, and fill the vessel, and start off the next tide."

Our agricultural readers will be interested by the following experiments made at Stirling by the late Mr. Smith, of Deanstone, to determine the value of liquid manure:—"A person there upon whom I could rely," Mr. Smith goes on to say, "laid out some land in rather a sandy loamy soil; the first division he manured with farming dung and ashes mixed, at the rate of 12 tons per acre, and at a cost of 48s. A second portion, with the same compost, giving 16 tons per acre, and at a cost of 64s. A third division with guano, 2 cwt. costing 16s. A fourth with guano, 4 cwt. per acre, at a cost of 32s. Another ridge, similar in extent to the whole of this, was manured with sewer-water, at the rate of 16 tons per acre. The average produce of the whole variety, dung and guano, averaged 45 bushels per acre of good barley. That with the sewage-water averaged 42 bushels per acre, showing that this small quantity of 16 tons had the effect of coming very nearly up to the dung and the guano, but showing also that more liquid manure might have been given with safety. There was a small piece tried without manure at all; the 16 tons of liquid manure was applied twice. The piece without manure only gave 30 bushels. The sewer-water was taken from a tank into which it flows from the streets; there is a very steep street at Stirling, down which the water flows in an open sewer; there is a considerable portion of spring water, and this water comes down in these gutters, so that at that place the water looks no more rich than that passed off on an average by the London sewers."

Another comparative illustration is given from Clitheroe, in Lancashire, when the liquid employed was the produce of common sewage, and soapuds, &c., from bleachworks. It was pumped up and conveyed by pipes to pasture lands, to one acre of which 8 tons of liquid were applied; another acre was dressed with 15 tons of common farmyard manure; and another with 3 cwt. of guano. The grass

raised upon the sewage-manured land exceeded that raised upon the land dressed with farmyard manure, or the guano, in the proportion of 16 to 8.

Liebig, in his "Familiar Letters on Chemistry," says, "We may judge with great accuracy of the commercial prosperity of a country from the quantity of sulphuric acid it consumes." Here is a valuable hint for Sir Charles Wood (remarks the editor of the *Leader*), when he brings forward his budget for 1852. Instead of wearying the House with a tiresome mass of poor-law returns, for the purpose of showing that pauperism has decreased eight or nine per cent., he would only require to ask Messrs. Tennant, of Glasgow, or Mr. Muspratt, of Liverpool, and a few other large manufacturers of the commodity, what demand there is for oil of vitriol compared with former years. The answer would show, among other things, what demand there has been for soap; for, as Liebig elsewhere remarks, "The quantity of soap consumed by a nation would form no inaccurate measure whereby to measure its wealth and civilization;" we must warn the Chancellor of the Exchequer, however, not to rely too much upon the soap test as a criterion of national prosperity. On consulting the revenue returns we find that the average consumption per head, thanks to our absurd and oppressive excise regulations, has not increased a single ounce during the last ten years.

GOLD INK.—This is made by grinding upon a porphyry alab, with a muller, gold leaves along with white honey, till they be reduced to the finest possible division. The paste is then collected upon the edge of a knife or spatula, put into a large glass, and diffused through water. The gold, by gravity, soon falls to the bottom, while the honey dissolves in the water, which must be decanted off. The sediment is to be repeatedly washed, till entirely freed from the honey. The powder, when dried, is very brilliant, and when to be used as an ink may be mixed up with a little gum-water. After the writing becomes dry it should be burnished with a wooll's tooth.

GREGORY'S POWDER.—Mix together equal parts of ginger, rhubarb, and calcined magnesia. This is a very good remedy for flatulency, indigestion, heartburn, &c., in doses, once a day of a scruple of 20 grains, which is a small teaspoonful.

TO CORRESPONDENTS.

Our Gentlemen who send manuscript to the *CHEMICAL RECORD* under arrangement for payment are informed that original matter alone will be allowed to count; no abstracts, translations, or adaptations being receivable under the terms proposed. The propriety of this will be obvious.

In consequence of a large press of commercial intelligence, we are obliged to defer answers to various correspondents until next week.

We are much obliged to our Camden-town correspondent for his communication.

"Mr. H. Norton."—The best form of galvanic battery for producing de-fagrating effects is Grove's. It can be procured of Messrs. Horne, Thornthwaite, and Wood, Newgate-street.

"Mr. P. Nicholson" must not use a platinum crucible for the fusion of metals; the instrument would be immediately destroyed. In the treatise by Fresenius on Analytical Chemistry a list is given of substances which exert an injurious action on platinum crucibles.

"A Country Chemist."—Tubes of black bottle glass may be procured of Mr. Ellis, Blackfriars-street, Fleet-street. The material is very infusible, and therefore exceedingly difficult to work, but when worked will answer the desired purpose.

"Mr. J. Protheroe."—The table-blowpipe is totally useless as an instrument of chemical analysis, for which the mouth-blowpipe is alone adapted. The table-blowpipe, indeed, is scarcely fit for anything except the working of glass.

"A Farmer."—It is true that the potato belongs to a highly dangerous order of plants, the Solanaceae, and its leaves, flowers, and fruit, are slightly poisonous. Probably, also, the tubers or edible portions are poisonous when raw, although the noxious principle is dissipated by the agency of fire. The tomato belongs to the same natural order.

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I have made trial of Mr. Franks's Solution of Copaiba, at St. Thomas's Hospital, in a variety of cases of discharges in the male and female, and the results warrant my stating, that it is an efficacious remedy, and one which does not produce the usual unpleasant effects of Copaiba.

(Signed) **JOSEPH HENRY GREEN.**

Lincoln's-Inn-Fields, 15th April, 1855.

From **BRANSBY COOPER**, Esq., F.R.S., one of the Council of the Royal College of Surgeons, London; Surgeon to Guy's Hospital, and Lecturer on Anatomy, &c.

Mr. Bransby Cooper presents his compliments to Mr. George Franks, and has great pleasure in bearing testimony to the efficacy of his Solution of Copaiba in Gonorrhoea, for which disease Mr. Cooper has prescribed the solution in ten or twelve cases with perfect success.

New-street, April 18th, 1855.

From **H. A. CÆSAR**, M.D., Surgeon, Professor of Anatomy in the Cork School of Medicine and Surgery; late President of the Hunterian Society of Edinburgh, &c. &c.

I have frequently prescribed Franks's Specific Solution, and deem it a valuable remedy in cases where Balsam of Copaiba may be prescribed with propriety, and have no hesitation in stating it is superior to any other preparation of the Balsam. (Signed) **H. A. CÆSAR, M.D.**

South Mall, Cork, Nov. 9th, 1841.

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ADVERTISEMENTS.

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THE

LIFE ASSURANCE CHRONICLE:

A MONTHLY RECORD OF, AND GUIDE TO, ASSURANCES, ANNUITIES, AND
GENERAL FINANCE.

Deeply impressed with the immense benefits derivable by society at large, and by our highly-civilised community in particular, from an organised extension of the great system of Life Assurance, and convinced that the beneficial effects alluded to can never be properly felt till a more extended knowledge of the great principles of Assurance is disseminated, and till an accurate, a faithful, and an impartial record of the progress made and daily making exists, the conductors of the *LIFE ASSURANCE CHRONICLE* have determined on establishing, under the above title, a Monthly Magazine devoted to the interests and to the advancement of Life Assurance.

Having gathered round them a staff of gentlemen long and intimately conversant with the subject, and many of whom are now actively connected therewith, the conductors have no fear of failing in the task they have proposed to themselves. Aided, moreover, by the possession of peculiar and rarely accessible sources of information, by elaborate statistical data prepared by skilful actuaries, and by a widely-extended correspondence, they feel confident in being able to place before the public a record of the present state, the past and future prospects, of Life Assurance detailed yet succinct, unbiassed and impartial in an eminent degree.

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Arrangements have been made with a gentlemen of extended experience and acknowledged abilities in matters of Assurance who will contribute a continuous series of papers on the subject of Life Assurance as a national system, on the general advantages derivable therefrom, on the peculiar benefits held out by particular companies to suit the views of those in the class of expectant assurers in particular states and professions in life. Great care will be taken, as regards the last named subject, to point out, clearly and distinctly, to persons desirous of effecting Assurances the best medium for the investment of their capital, and the Assurance Companies whose modes of granting policies are more specially adapted to their wants. Thus the clergyman, the merchant, the broker, the clerk, the soldier, the sailor, the freemason, the artist, or the man of letters, will all find in the *LIFE ASSURANCE CHRONICLE* a sure guide to their immediate requirements in Assurance. The members of each class will be clearly directed to modes of Assurance likely to suit their particular views; and much unnecessary confusion and misrepresentation—much deplorable disappointment and tribulation—will consequently be avoided.

While the main object and chief aim of this Journal will be the advancement of Life Assurance, considerable attention will be paid to other financial subjects, indirectly connected therewith, yet over which it exercises considerable influence. Annuities, Loans, and Mortgages, inasmuch as they affect or are affected by Life Assurance, will be treated of at length, and in a manner suited not only to the comprehension of the accomplished financier but to the comparative novice; to whom a clear and proper exposition of the best medium of financial investment is of so much and of such vital importance.

To give a pleasing variety to the *LIFE ASSURANCE CHRONICLE*, while, at the same time, it conveys important information, an interesting collection of papers, by a writer of literary eminence, will be given monthly, entitled "Materials for a History of the Investment of Capital in England." These will form an anecdotal and historical survey of finance and financiers from the time of the Crusades to the discovery of the gold placers of California downwards.

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It will be, in conclusion, the end and aim of the conductors of the *LIFE ASSURANCE CHRONICLE* to act as unprejudiced and responsible guides both to the Assurers and the Assured—to bear, above all, in mind the interests of the public, and to endeavour (should necessity call for it) to warn them, and put them on their guard, against projects of Assurance as delusive and fallacious as they are dishonest—against speculators as ignorant as they are greedy, rapacious, and unprincipled. It will be their special task to expose those mercenary and mendacious speculators who hang on the skirts of every noble scheme, and who would seek by chicanery and dishonesty to injure a magnificent and philanthropic institution.

All Communications must be sent to the Office of the *LIFE ASSURANCE CHRONICLE*, 17, Upper Wellington-street, Strand, addressed to the Publisher,

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The business of this Company is divided into three principal branches. First,—The Assurance of Life and all the ordinary transactions of Assurance Offices. Secondly,—The advancing an amount in connection with the Policy, and the effecting all pecuniary arrangements connected with Life Assurance. And, Thirdly,—The Granting Annuities (both immediate and deferred), and Endowments, upon a plan adopted only by this Company.

THE ASSURANCE OF LIVES.

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Dr. Yeoman, speaking of the Pyretic Saline, in the *People's Medical Journal*, 29th April, 1851, says, "For a cooling, refreshing, and wholesome spring or summer beverage, we know of nothing better than a tumbler of fresh water and a teaspoonful of this preparation. We speak from proved and personal experience, and cordially recommend our readers to test it in like manner."

Those who from choice drink water, or from necessity take that which has filtered through chalk, should use frequently the Pyretic Saline, to prevent the injurious consequences arising from its being surcharged with that substance. It has been proved, beyond all doubt, that these Salines are the means Nature uses to hold in solution the lime necessary to the formation of bone in the body—hence a deficiency will account for goit, gall stones, and other painful affections.

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It is strongly recommended to the notice of mothers and nurses for the use of infants of the most tender age, being far superior to any other powder; also after sea-bathing, and for gentlemen after shaving its agreeable effects will be fully tested.

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ORIGINAL SERIES.

ON GEOLOGICAL MINERALOGY.

By Professor TENNANT, of King's College.

On Wednesday morning Professor Tennant gave the introductory lecture of his course on mineralogy, at King's College. The lecture was very numerously attended, and the audience listened with great interest, thus proving the desire for practical instruction in mineralogy which is now beginning to be felt.

After adverting to the modern character of mineralogy as a science, the lecturer commenced his subject by establishing a tangible distinction between the characters of the animal, vegetable, and mineral world. Easy as is the general appreciation of these three grand divisions of the material universe in their broad features, no definition has yet been framed that should be entirely free from cavil; perhaps, however, the terse apothegm of Linnaeus might be sufficiently precise for the purpose he had in view. According to his axiom, minerals were said to grow; vegetables to grow and live; animals to grow, live, and feel.

One of the greatest distinctive peculiarities of minerals consists in the tendency to arrange themselves in mathematical forms—to constitute, in fact, crystals; and in many cases where crystalline structure was not immediately discoverable it nevertheless existed in a latent and hidden state and might be developed by proper treatment.

This impress of crystalline form was one of the most commonly-applied means of discriminating between minerals otherwise similar in physical appearance. Thus, for instance, quartz or rock crystal is exceedingly lustrous, and to a tyro in mineralogical study it presents the most apparent characteristic of the diamond—but quartz might always be discriminated by the mere form of its crystal, which was that of a six-sided prism, terminated by a six-sided pyramid.

Quartz, the lecturer remarked, was largely associated with gold in the Californian washings; and he entertained no doubt the Californian region contained diamonds also, which were frequently thrown inconsiderately away, owing to the ignorance of the uneducated workman.

The white topaz had frequently been mistaken for the diamond, but might invariably be distinguished by its characteristic fracture—namely, at right angles to the axis of the prism. This was only one instance out of many which could be cited of the means of distinguishing minerals from each other by the direction of their fracture or cleavage.

Another means of discriminating between minerals was by the characteristic of their lustre. Lustre is a property which may be said to especially characterize the metals, and hence the term metallic lustre. Some metals, however, were not lustrous; and, on the other hand, some non-metallic (in the ordinary acceptation) bodies possess this quality. Thus, mica plates, especially when wet, possessed lustre to an eminent degree—so as to give the appearance of silver or tin foil. Degree of frangibility was another property investigated by the mineralogist, with the view of enabling him to distinguish between the various substances which might come in his way.

Some bodies might be easily broken by the blow of a hammer;—whilst others of similar external physical characteristics were so hard, that fracture by this means would be impossible.

The lecturer then adverted to the physical characteristic of colour, as a means of discrimination between different minerals: for the most part were found in states of

chemical combination, and impressed with the various colours which belong to certain classes of metallic salts.

The characteristic of touch again was valuable in distinguishing metallic groups and species. Thus, for example, the characteristic of soapyness to the touch was indicative of a magnesian composition, and an example of which might be recognised in French chalk. Roughness to the touch and between the teeth was indicative of silicious minerals; and adhesiveness to the tongue was a leading characteristic of alumina—a characteristic which might be recognized in the effect of bringing within the lips the stem of a tobacco-pipe.

Odour, again, was not to be neglected as a characteristic of mineral composition; sulphurets of iron and copper, for instance, when exposed to atmospheric agencies, emitted a perceptible smell; and the applicability of clay slate to building purposes was greatly limited by the fact of its emitting a disagreeable smell on being exposed to wet.

Mr. Tennant adverted to the popular opinion of the stationary character of metallic deposits, and demonstrated its want of foundation. The deposition of minerals occurs with great slowness, and therefore is unfavourable to the limited sphere of human observation; but it nevertheless is continually taking place. Not to depend on theoretical reasons for combating the popular notion, the lecturer referred to the mineral forms termed pseudo-morphous—namely, those geometrically bounded forms resembling crystals, and which result from the deposition of metallic substances in matrices, which originally contained a material regularly crystallized, and which the operation of material causes had disintegrated and removed.

Not only, remarked the lecturer, is the practical mineralogist's occupation limited to economic minerals themselves, but he extends his investigations so as to become acquainted with the large geological formations of the globe; seeing that in certain formations the existence of definite minerals may be expected, and in certain other formations, the same minerals never occur. Thus, for instance, tin is found in the formation termed by miners *killas*, and the veins of this metal, like most others, follow a definite direction.

The lecturer adverted to the very restricted acquaintance that the geologist, mineralogist, and chemist will ever continue to have of the structure of the globe. The deepest mine in the world penetrates less than a mile into the earth; a distance which is hardly appreciable in our planet's mass.

He lamented that, although schools of mining and mineralogy had been long established in France and Germany, yet in this country, so rich in its mineral treasures, that their value amounts to no less than twenty-six millions of pounds annually, we have had, until lately, no public mineralogical instruction;—that the directors or captains, as they were called, of our most productive mines, are too often sadly ignorant of mineralogical learning, and look with disfavour on the sciences which, if cultivated by them, would prove of the greatest service.

Referring to the impulse given to the coal and iron trade by the general establishment of railways, the lecturer stated the increase of these minerals to be 25 per cent. within the last ten years. The annual value of the British iron product alone was now ten millions. The lecturer, when speaking on the subject of the Australian gold diggings, expressed his opinion that the precious metal there existing would be discovered to be far inferior in quantity to that of California.

Mr. Tennant announced that his next lecture would be on mineralogy. (To be continued.)

* The lecturer stated that King's College had set the first example of establishing a course of mineralogical lectures, and eulogised the School of Economic Geology in Jermyn-street.

REPORTS OF LECTURES ON MATERIA MEDICA.

By JONATHAN PEREIRA, M.D., F.R.S., &c.*

Gentlemen,—In the treatment of disease, the physician avails himself of two grand classes of remedies, the material and the immaterial. The former alone concerns you,—the former alone can be denominated the *materia medica*, although immaterial or mental agencies are of the highest importance in the treatment of the insane.

We have then to direct our attention to the material agents alone, and we must commence our labours by establishing a classification.

A very natural classification presents itself under the heads of chemical and physico-mechanical; of which again the former alone concerns us; the latter comprehending the imponderables and the mechanical appliances of surgery.

Chemical agents may be subdivided into foods, medicines, and poisons; a subdivision sufficiently accurate for all common purposes, although it must be confessed that it is not remarkably clear:—for instance, under what division are we to range cod liver oil? That it is now a favourite remedial agent you very well know, nor is it necessary for us to inform you that it constitutes an article of food. Thus, as between food and medicine, we find no well-defined law of division; and, proceeding farther, there can be very little doubt but that, if given in sufficient quantity, it would also act as a poison.

On referring to your *Pharmacopœias*, gentlemen, you will find that the substances therein treated of are discussed under the two heads of the *materia medica* and the *preparata et composita*.

Formerly, when chemical manufactures had not arrived at their present state of excellence, it was the custom of the physician to make his own medicinal agents. Gradually, however, this custom fell into disuse, and the apothecary took his place; and now—when manufactures have arrived at such a high degree of excellence the pharmacist is more and more restricted to the preparation of mere galenicals. You will easily understand, by reference to your *Pharmacopœias*, that many substances still remaining in the list of *preparata et composita* might with great propriety be transferred to the *materia medica*.

The articles of the *materia medica* are derived from the three kingdoms of nature—the animal, the vegetable, and the mineral. In this course of fifty lectures I shall limit myself to the consideration of the two former, leaving the mineral *materia medica* to be described to you by Mr. Redwood, your lecturer on chemistry.

You will think, doubtless, that the divisions here established are clear enough; but there are difficulties which do not at first appear.

Chalk—the basis of so many pharmaceutical preparations—to what grand division of nature shall we refer chalk? To the mineral kingdom, you will say:—and as a mineral it is treated of by chemists and geologists; nevertheless chalk is of animal origin, as the microscope reveals to us so unmistakably, that the very form of the soft tissues of the chalk-depositing animals can be seen.

Again, what shall we say of coal and its derivatives? Shall we speak of them as belonging to the mineral or the vegetable kingdom? As minerals they are commonly discussed, but we all know their vegetable origin.

There are two aspects under which the articles of the *materia medica* may be studied. The first, and apparently the most simple, regards them with reference to the arrange-

ment of their parts; for instance, treating of vegetables, we might discuss them under the heads of roots, wood, bark, leaves, tops, flowers, &c. The second regards them in relation to the distinctions established by natural history, which order in this place I shall adopt; treating of their natural history, their chemical, medicinal, and their poisonous properties. The study of poisons, gentlemen, is especially necessary to you just now, when the imposture of Coffinism is vying with that other imposture of precisely opposite tendency—homœopathy. Mr. Coffin tells us that cayenne pepper and lobelia inflata are not poisonous—that they do no harm to the healthy subject. It will be for you, by your pharmaceutical and chemical knowledge, to aid in dispelling this pernicious fallacy.

In no subject is the advantage of oral—over written instruction more apparent than in the study of *materia medica*. Thus, for instance, the difference between the appearance of cascarrilla and Peruvian bark is not easy to describe by mere words. The lecturer, however, can show this difference at once; and many other similar examples might be adduced.

The discrimination of various articles of the *materia medica* will be easily acquired; but the recognition of adulterations in each specific article is a matter of greater difficulty. Powerful though well-directed chemical analysis be in communicating this information, it may be doubted whether, so far, at least, as concerns the animal and vegetable kingdoms, the microscope be not superior.

You are doubtless conversant with the recent very extensive employment of the microscope for disclosing the adulteration of food. No less useful—no less powerful—is it in disclosing the contamination of drugs; and I cannot too strenuously recommend you to employ it.

[The lecturer concluded by entering into a long description of the different parts of a microscope—and incidentally touched upon the nature of compound lenses; spherical and chromatic aberration, &c.—subjects which the readers of our journal will see fully treated of in the article on Photography, by Mr. Thornthwaite, and now being published in the RECORD.]

(To be continued.)

ON AGRICULTURAL CHEMISTRY.

By M. P. JOIGNEAUX.

(Continued from page 182.)

ON COMPOSTS.

Composts are economical manures made up of all kinds of substances, organic and inorganic, which ordinarily are neglected or lost. In the form of compost, matters that, taken separately, have no value in the eyes of our rural population, become, when united into one bulk, good and valuable manures.

In the preparation of composts it is necessary to proceed methodically, so as to combine them in a manner suitable to the exigencies of specific vegetables.

The insufficient quantity of ordinary manures has suggested the formation of composts. When an agriculturist has exhausted his dunghills, and finds the land still requires more, he looks about him, and collects into heaps the various refuse of his farmyard; he sweeps together animal garbage, feathers, and mud; vegetable parings, spoil fruit, &c., and mixes all together; such is the origin of compost.

In the north of France, in the vicinity of towns and villages, in gardens, and on the margins of cultivated fields, the farmers make compost heaps with alternate layers of turf, mud of the high ways, useless herbs, and lime; to this assemblage of materials they give the name of *pâtes*. They are no more than heaps of primitive composts.

In the Pays de Caux the foregoing composition is mixed with stable dung; thus making some progress in the art of compost formation.

* Delivered at the Pharmaceutical Society.

The question of the best means of improving composts naturally devolved upon agriculturists—and the English more than any others have applied themselves to this study. They are passionate admirers of composts, which they hold to be superior to every other variety of manure.

We have copied the English in this opinion; and we were not long ago as passionate admirers of composts as they; but popular opinion has already undergone considerable mutation in this respect. Composts are still regarded as valuable manures; but not so valuable as stable dung, for which they are at best only inferior substitutes.

Our farmyards furnish us with kitchen refuse and wash; feathers, soap-suds, fatty waters, animal excretions, spoilt vegetables, broken hay and straw; wine lees, besides numerous other refuse that can only be applied to the formation of compost. It would be well if the rational agriculturist divided his composts into four classes, of which the first should be destined to the use of natural and artificial meadows; the second, to corn fields; the third, to the nourishment of potherbs and other exhausting plants; reserving the fourth for the purposes of manuring the vines and fruit trees.

The compost desirable for meadow land will be sufficiently indicated by reflecting on the necessities of this kind of vegetation. That which meadow land requires is a manure which shall favour the vegetation of those graminaceous and leguminous plants which form the basis of good pasture. Now, these plants require manures rich in potash, and containing a minute quantity of sulphur. I, therefore, recommend the following composition:—

A bed of calcareous earth, from fifteen to twenty centimetres thick; of dust and weeds sufficient to cover the preceding; a slight sprinkling of sulphate of lime in powder, a second layer of calcareous earth, then a slight course of weed or grass mixed with plaster, and so on, repeating the alternation until the heap has attained the height of 1½ or 2 metres. This being done, let the compost heap be pierced vertically with holes, into which are to be poured from time to time washings of dunghesps, kitchen slops, soap-suds, &c. In less than three months an excellent compost will, by following these directions, have been obtained, adapted for spreading over natural meadow-land, in the early part of spring; and upon artificial meadows, a little later. For the same purpose the following compost is also very good:—Make a heap of alternate layers of bricks and broken tiles, weeds and spoilt vegetables, wood cinders, soot and pigs' litter, moistening the whole with dunghill liquid, soap-suds, and kitchen wash.

I give the two preceding compositions to serve as an example. The intelligent cultivator can vary them almost to infinity. I may as well add that Schwerts recommends the following compost:—He collects the dust of haylofts, spoilt grain, &c., turnip-tops, straw, and such like, and with the whole he fills a pit. At the end of twelve or fourteen days he clears out this mass, which emits a very bad odour, and which is alive with worms; but which nevertheless is a very excellent manure.

Composts for the Cereales should be very rich in soda and potash, bodies of which the crop in question is very greedy; they should also contain more animal matters than the preceding, and also a certain amount of phosphate of lime.

A compost formed of calcareous mud of roads, of coal-ashes, bricks, and broken tiles, flooring of stables, animal refuse, and urine, produces wonderful results upon wheat crops growing in compact argillaceous soils.

A compost formed of road-sweepings, of turf and clearings of ditches, fine sand, cow-dung, nitre, wood-ashes, green vegetables, and rotten wood, would, doubtless, yield good results on light, arid, calcareous lands.

In the case of potherbs and other exhausting vegetables, it is necessary to augment the dose of azotized substances, and to diminish the amount of calcareous material. Plants for which this manure is good are turnips, radishes, mustard, colza, and indeed the whole family of Cruciferae.

For these vegetables, then, we should make our compost of road-scrappings, ditch-clearings, turnip-tops, cabbage-leaves, fragments of dead animals, cuttings of wool, plaster, pyritic cinders, feathers, animal excrements, and dunghill

wash; which materials being mixed, the whole should be allowed to ferment for the space of three or four months.

If we have to manure exhausting plants not appertaining to the family of Cruciferae, we should adopt the same composition, omitting only the plaster or gypsum, the wool-cuttings, and pyritic cinders.

Composts for vines and fruit-bearing trees require peculiar care. They cannot be prepared by any universal routine, but only after careful reflection; for the vegetables in question are delicate, and the flavour of their fruit must be well considered.

Fæcal matters, animal remains, horse and sheep litter, ought to be excluded from amongst the materials of these composts, and sheep-litter most especially.

Composts which should consist of calcareous earth, in which nitre exists, soot, coal-ashes, lime, cut vine-twigs, fatty matters, soap-suds, and a small amount of ammonia.

It will not be well to terminate this description of composts without giving the formulæ recommended by various cultivators.

Compost of Bourbonnais for an hectare:—

1 to 2 hectolitres of colombine,
3 to 4 hectolitres of cinders,
10 barrowfulls of road-scrappings.

English compost for the manuring of half an are:—

Turf-cinders 906 kilogrammes,
Soot 45·30 "
Lime 45·30 "
Sea-salt 45·30 "
Saltpetre 6·34 "
Sheep-dung 20 hectolitres,
Bone ashes 6 "

Universal economic compost:—

Potash of commerce 25 kilogrammes,
Kitchen wash 18 "
Sea-salt 56 "
Unslacked lime 25 "

Compost of M. Quénard, de Montargis:—

A layer of pond-weeds,
" quicklime, cinders, and soot,
" straw,
" quicklime, cinders, and soot.

All to be washed from time to time until decomposition is complete.

PROGRESS OF SCIENCE AT HOME AND ABROAD.—TRANSACTIONS OF SOCIETIES, COMMUNICATIONS, &c.

PARIS ACADEMY OF SCIENCES.

Sitting of September 29.

ON THE COMPOSITION OF ATMOSPHERIC AIR.

By M. LEWY.

M. Dumas presented to the Academy the results of the numerous experimental researches made by M. Lewy on the composition of atmospheric air. These researches were undertaken by M. Lewy, during his residence at Paris, whilst on his journey to South America, and during his stay at New Granada; and were made both on the coast and at an elevation of 3193 metres above the level of the sea.

M. Lewy's analyses were made according to the process adopted by MM. Regnault and Reiset, which consists in analysing the air by volumes. To ascertain the elastic force of the gases, M. Lewy employed an excellent cathetometer constructed by M. Perraux; he was thus enabled to obtain the greatest possible degree of precision in his experiments; the greatest difference between two analyses of the same specimen of air never exceeding $\frac{1}{10000}$, and generally speaking, being not more than $\frac{1}{100000}$.

The different samples of air submitted to analysis by M. Lewy were collected in glass tubes, the edges of which were filed off, and open at both ends. The tubes were of the capacity of about 100 cubic centimetres. The mode of filling

them with air was as follows:—One end of the tube was connected by means of a caoutchouc tube with a small bellows, which was kept in motion during a sufficient length of time to insure all the air contained in the tube being replaced by the atmospheric air of the place where the experiment was performed, the most careful precautions being at the same time taken to prevent any respired air being mixed with that intended for analysis. The tube being filled with air was immediately hermetically sealed.

On comparing one with another the analyses made by M. Lewy, and which he has grouped in three categories, viz., those made at Paris, during his journey, and at New Granada, it appears that the constitution of the atmosphere is almost the same in the New as in the Old World. On taking the mean of the analyses executed at eleven different localities in New Granada it was found that 10,000 volumes of atmospheric air contained 4.008 of carbonic acid, 2101.425 of oxygen, and 7894.557 of nitrogen. These are the same proportions as those obtained by analyses of atmospheric air taken in different localities of Europe. In carefully examining, however, these analyses, and at the same time taking atmospheric conditions into account, some interesting differences will be observed.

Thus, in Europe, after a long season of wet weather, these researches show that carbonic acid and oxygen always exist in the atmosphere in less proportions than after a long drought; these differences, however, are appreciable only when the analysis is made with very great precision.

In the New World, where the seasons are more distinctly defined, these variations are more readily ascertained. During the fine season the air always contains a little more oxygen and carbonic acid than during the rainy season. Thus, on taking the mean of a great number of analyses, M. Lewy found that 10,000 volumes of atmospheric air at Bogota contained:—

	During the wet season, on a fine day.	During the dry season, on a cloudy day.
Carbonic acid	3.822	4.573
Oxygen	2099.642	2102.195
Nitrogen	7896.636	7893.232

The difference, therefore, which exists between the composition of the atmospheric air of the two seasons is a mean of 0.751 of carbonic acid, and of 2.653 of oxygen, in 10,000 volumes of air.

On taking the maximum and the minimum of the results obtained in the analyses performed during the two seasons, we find for 10,000 volumes:—

	Wet Season.	Dry Season.
Carbonic acid	3.609	5.043
Oxygen	2099.032	2103.199
Nitrogen	7897.359	7891.758

The greatest difference, consequently, is 1.434 for carbonic acid, and 4.167 for oxygen. These differences are sensibly the same as those found by M. Lewy between the analysis of the atmospheric air of Paris and of Havre, made under meteorological circumstances corresponding to the two seasons of South America.

Hence it follows that the composition of the atmospheric air which we respire, whether in Europe or in America, is sensibly the same as respects the relation between oxygen and nitrogen with that which we respire at an elevation of 3000 metres; the difference consists in the quantity of carbonic acid which everywhere appears to be somewhat more in the air on the tops of the mountains than in the valleys and at the level of the sea.

As regards the analyses of atmospheric air collected at sea, these have furnished M. Lewy with a very interesting result. During the day the air was constantly found to contain a little more oxygen and carbonic acid than during the night, this difference being the more appreciable the greater the distance from the coast. M. Lewy attributes this to the action of the solar rays, which heating the water of the sea, disengage a part of the gases held by it in solution. It is well known that the air contained in sea-water is richer in oxygen and in carbonic acid than the air of the atmosphere. The fact is certain, whatever may be the explanation. In illustration we may cite the following analysis of air col-

lected on the Atlantic Ocean the same day, the same wind prevailing, and at a distance of more than 400 leagues from the coast:—

	At 3 o'clock in the morning.	At 3 o'clock in the afternoon.
Carbonic acid	3.348	5.420
Oxygen	2096.139	2106.099
Nitrogen	7900.515	7888.481

The difference is thus 2.072 for carbonic acid, and 9.960 for oxygen, in 10,000 volumes of air.

The analyses of air made at New Granada have also sometimes shown an increase in the proportion of carbonic acid, coinciding with a diminution in the proportion of oxygen, admitting of ready appreciation. M. Lewy accounts for these alterations by the emanations of the numerous volcanoes which exist in the New World, and also by the effect produced by the annual burning of the forests. It is in fact during this period that the constitution of the atmosphere presents these extraordinary changes. In those countries these forest clearings are effected by means of immense fires, producing considerable quantities of carbonic acid, which, mingling with the air of the atmosphere, sensibly alter its composition. M. Lewy has found that the proportion of carbonic acid sometimes rose to 49 in 10,000 volumes of air at these periods, or in other words, ten times more than under ordinary circumstances.

The diminution of oxygen under the same circumstances was often very considerable, amounting to 68.350 in 10,000 volumes of air. Thus instead of 2101.425 of oxygen only 2033.075 has often been found in 10,000 volumes of air.

ON THE MANUFACTURE OF PHOSPHORUS MATCHES IN RELATION TO HEALTH.

As this branch of manufacture has obtained an unenviable celebrity for its unhealthy character, the following contribution of Dr. Ebel is of importance:—He gives the result of his five years' experience in the factory of Waldmichelberg, whence large supplies of matches are exported to all parts of Europe and America. He holds the same view with Dupasquier, Jünken, Helfft, and others, that the disease is not produced by merely the inhalation of phosphorus vapours. In the manufactory in question there are about 200 individuals employed, male and female. The hours of employment are from five to seven, and the meals are taken in a separate part of the establishment. The manufacture of phosphorus matches has been usually attended in similar establishment with frequent necrosis of the under jaw; but in the manufactory of Waldmichelberg no such disease had occurred, although caries of the teeth was very prevalent.

The observations of Dr. Ebel may be therefore regarded as confirming the experience of former writers as to the *tendency* to necrosis of the jaw, although the disease itself had not occurred.

ON THE BEST MEDICINAL COMPOUND OF IRON. By M. MARTENS.

An essay has recently been read by M. Martens, before the Belgian Academy of Medicine, on the various salts of iron used in medical practice—and their comparative advantages. He arrives at the following general conclusion:—1. That as a rule the lactate of iron is the best preparation. The author assumed that all other preparations of iron were converted into the lactate by the agency of the stomach, which assumption M. Lombard and other members denied. 2. It may be advantageously replaced by the carbonate gives in water or in pills made with honey, so that superoxidation may be prevented. 3. All ferruginous pills in which the metal is liable to superoxidation should be rejected, because they speedily become indurated, so as to be soluble neither in water, nor in the juices of the stomach. 4. Insoluble ferruginous preparations ought always to be administered at meal time, in order that they may become dissolved in the acid juices then existing in the stomach. 5. These preparations should be

chosen which cannot be precipitated, or rather rendered quite insoluble, by the alkaline juices of the duodenum, especially during intestinal digestion. 6. The most active are those which, having penetrated into the blood in their liquid state, are then most easily assimilated by the hæmatosine, so as to form with it the red colouring matter of the blood. 7. In the treatment of chlorosis or anemia, it does not suffice to prescribe preparations of iron, but their assimilation should be aided by residence in the country or in localities well exposed to the sun's rays. 8. The regimen in chlorosis should, as far as possible, be composed of succulent and dark-coloured meats, and not of white alimentary substances, in which oxide of iron is usually defective. 9. Slight or recent chlorosis may be generally cured by animal regimen alone, in combination with exercise in the open air and insolation. 10. The sufficient use of meat introduces into the economy an adequate amount of iron for the formation of red globules, and may give rise even to their excessive formation. 11. On the other hand, the excessive use of potatoes, white bread, vegetables, and fatty substances—predisposes to chlorosis; because such aliments contain too little iron to form red globules. 12. Wheaten bread may be rendered much more restorative by adding prior to the panification a little sulphate of iron, and it is only thus that an alimentation entirely capable of replacing meat can be furnished. 13. We may regard a minimum of two grains as the quantity of oxide of iron that is required daily for the economy of the blood. 14. All persons who are disposed to anemia should employ such ferruginous bread to aid the formation of red globules. 15. Manganese, although a minute constituent of blood globules, is not indispensably necessary to sanguification.—*Gas. Méd.*, No. 48, 1860.

EXTRACTS OF FLESH AND BLOOD AS MEDICINAL AGENTS.

MM. Breslau and Mauthner describe the extracts of flesh and blood as being peculiarly advantageous when administered in certain cases of *scrofulous exhaustion*,—*exhaustion from anemia, diarrhoea, &c.*

Dr. Breslau's extractum causes is thus formed:—Take fresh ox flesh, free from fat, chop it up small, then beat it in a stone mortar with a little cold or lukewarm distilled water; then submit it to the action of a press. The juice,—reddish in colour, is now heated to coagulate the albumen, and is finally evaporated in a water bath to the ordinary consistence of an extract. As ordinary flesh contains only 1 in 100 of kreatin, while that of the heart, according to Dr. Gregory, contains from 1·37 to 1·41, this is the part employed by Dr. Breslau.

The extract possesses an agreeable odour and taste; and is easily soluble in water. Its action on litmus is acid.

The extractum sanguinis bovis of Dr. Mauthner is thus made:—Pass fresh blood caught from the slaughtered animal through a sieve, then evaporate it to dryness in a water bath, and when cold rub it to powder. Dose, 10 to 20 grains per diem in a little water.—*Büchner's Rep.*, No. 19, p. 90. *Journ.*, für Kinderkrankh. xvi., p. 66.

ON MEDICINAL CIGARS. By Dr. LANDERER.

Cigars have been before now made the medium of conveying medicinal substances into the system. In this way stramonium cicuta, camphor, and corrosive sublimate have been introduced amidst the fumes of tobacco smoke. Of these bodies mercury has been found by Dr. Landerer so efficacious in ulcerated sore throat from syphilis that he turned his attention to extend this form of medication. Having, therefore, deprived the tobacco to be operated upon of its narcotin,—he moistened it with tincture of iodine, an ethereal solution of iodine of mercury, or a solution of iodide of potassium. The cigars formed by this medicated tobacco he found of great use in syphilitic ulceration of the throat and fauces.

By moistening the tobacco with an ethereal solution of hyocyamus he has relieved distressing spasmodic cough, without inducing narcotism. Dr. Landerer also found a solution of creasote in alcohol and ether useful in scorbutic ulceration of the gums. Cigars moistened with tinct. mosch. relieved hysterical and spasmodic coughs, and acetate of morphia severe hysterical paroxysms. Arsenical cigars made by steeping tobacco leaves in Fowler's solution have also, in Dr. Landerer's practice, been employed with advantage. In fine, Dr. Landerer believes this form of medication to be capable of great extension.—*Büchner's Rep.*, B. vi. p. 347.

ON THE FELIX MAS IN TÆNIA. By Professor ALBUS.

This gentleman believes the ethereal extract of felix mas to be a remedy in tænia superior to kouasso. Much of the efficacy of the extract depends on its efficient preparation. Only the fresh sort should be used, collected in May or June; it should be macerated in ether for several days, the infusion being frequently shaken.

ON THE TREATMENT OF RHEUMATISM BY HOT VAPOUR BATHS OF TURPENTINE. By M. A. CHEVANDIER.

This gentleman has published a second memoir on this subject, in which are recorded numerous instances of the benefits arising from this mode of treatment.

In bespeaking a favourable opinion of turpentine vapour baths, deduced from theoretical considerations, the author goes on to say, "If we reflect an instant on the conditions under which the sufferer from rheumatism are placed, we shall not fail to recognise how favourable they are to this kind of remedy. The essence of turpentine penetrates into the organism through all the pores which the high temperature has opened. It is carried through the circulatory system, the flow of which it accelerates. No rheumatic atom escapes the remedy; which acts, like all other excitants, by modifying the nature of the rheumatic irritation, which it hurries to a speedy resolution. It acts, so to speak, just like nitrate of silver in chronic ophthalmia, and, moreover, it appears to exercise a specific action on the rheumatic element, by provoking a cutaneous transpiration. The most ordinary cause of rheumatic affection undoubtedly is a repression of cutaneous transudation, or the suppression of an habitual perspiration. We have abundant facts to prove that in those afflicted by rheumatism there exists a noxious principle to be eliminated. Thus not only local rheumatic pains but general febrile symptoms become calm as soon as a serous effusion takes place in the most insensible tissues—for instance, the cellular tissue. The influence of a blister also applied to the suffering part affords us another illustration of the same doctrine. This serous collection which surrounds the parts adjoining to the affected spot is a true local crisis;—incomplete it is true in itself, but which is rendered perfect by absorption."

M. Chevandier relates many cases of the good effects arising from the use of these baths. One case we append:—

Antoine Roux, a mason, was affected with acute rheumatism at the age of twenty-seven. For the space of three years his pains would not permit of his following any employment. All his joints were in a state of ankylosis; all his movements were restricted, and painful. The least pressure upon the back or the clavicles made him cry out with agony. He grew worse from day to day, and a severe cough which now set in added considerably to his sufferings. In this condition he determined to have recourse to the turpentine vapour baths, of which he employed five—each of fifteen minutes' duration.

The immediate result of this treatment was the setting in of such a violent perspiration that he required a change of no less than thirty-seven shirts. After the third bath, a confluent eruption broke out over all his body, his face became swollen, and all his movements became more free and less

painful. In 1848 he again took five baths, after which he thought himself cured, but the disease returned in a slight degree. In 1849 he again took six baths, which effected his cure totally; at least he has not since suffered from the disease.—*Revue Méd. Chir. de Paris*, tome ix., p. 129, Sept. 1851.

ON THE EMPLOYMENT OF CALCINED MAGNESIA AS AN ANTIDOTE FOR CUPREOUS POISONING.

By M. CH. ROUCHER.

"The greater number of antidotes," remarks the author, "for salts of copper are either not to be depended upon, or difficult to be procured when wanted. Thus milk and albumen, when employed in excess, redissolve the cupreous solid which they had formed, and the hydro-protosulphuret of iron recommended by M. Mialhe is a product of too uncertain preservation, and the preparation of which occupies too much time to enable one to administer it as speedily as the violent action of cupreous bodies requires.

Impressed with these views M. Roucher made some experiments on dogs, in the course of which his hopes as to the remedial action of magnesia in the case of cupreous poisoning were amply confirmed. He arrived at the following general conclusions:—

1. That calcined magnesia completely arrests the symptoms of poisoning by sulphate of copper when administered sufficiently early.

2. That the dose of magnesia necessary to neutralize the effects of the sulphate, is at least eight grammes of the antidote to one of sulphate.

3. That magnesia demans itself with the other salts of copper similarly with the sulphate. But it yet remains to be investigated how far the antidotal agency of magnesia may be influenced by the presence in the stomach of collateral bodies.—*Gaz. Méd. de Strasbourg, et Revue Méd. Chir.*, tome ix., Septemb., 1851.

ON A NEW MODE OF ADMINISTERING SULPHUR.

By Dr. J. HANNON.

It is well known to every chemist that sulphur, when fused and brought to a temperature of 320° F., manifests a pasty condition and turns brown. If poured into cold water, it assumes a great physical similarity to India rubber, and in this condition it is employed for taking seal impressions. The elasticity of the material soon wears off, and it becomes brittle, still maintaining its dark colour.

It is to this viscous or dark condition of sulphur that Dr. Hannon draws the attention of his medical brethren. Sulphur, he remarks, is one of the most commonly employed of all remedies; but practitioners have very far from availed themselves of its best qualities in a therapeutic sense. This arises from the form in which it has been administered, namely, the yellow and solid form, in which condition, unfortunately, it is least active. There exists another state of sulphur, in which the body, although sulphur still, enjoys properties of a far more energetic kind—I mean the brown, or viscous, condition. Under this form it assumes all the activity of alkaline sulphurets, without possessing any of their inconveniences.

Yellow sulphur very rarely succeeds against gout and rheumatism, but brown sulphur succeeds invariably. It is transformed with much greater rapidity into hydrosulphuric acid, as is evidenced by the peculiar odour of all the excretions. It follows, therefore, that a much less quantity of brown sulphur suffices in the affections against which it is administered.

Besides the plan already mentioned of forming this brown condition of sulphur, it may be thus prepared:—Mix two parts of nitrate of potash and two parts of chloride of sodium, and add to the mixture one part of sulphuret of copper, obtained either directly or by precipitation. There will result a viscous sulphur by adding to the previous materials dilute

sulphuric acid, until no further effervescence takes place. The viscous sulphur floats on the surface of the fluid in the form of globules of different sizes. During this reaction aqua regia is formed, which reacts upon the sulphuret of copper, forms chloride of copper, and liberates sulphur. If, now, sulphuric acid be added, there result hydrochloric acid and sulphate of copper. This latter reaction is not injurious, and in every case there is obtained the same amount of viscous sulphur.

By the direct treatment also of sulphuret of copper by nitro-muriatic acid, there equally results viscous sulphur. It is proper in conducting these operations, to continue adding aqua-regia, until all the copperas has been dissolved and changed into chloride. The viscous sulphur, collected and washed, is more active than that obtained by the previous operation.

The peculiar soft condition of viscous sulphur enables it to assume with great ease the form of pills. It may be given alone or in combination.

The following are some useful formulæ for its administration:—

1. Dose and Mode of Administration internally.

Viscous sulphur obtained by precipitation or by fusion may be employed.

In the former case it is necessary to incorporate it with balm of Tolu, a material which has the property of retaining it for a considerable time in the viscous state.

In the second case it is sufficient to make it into pills in the ordinary way. As a diaphoretic the precipitated material is given in the dose of from 6 to 20 grains, and the sulphur obtained by fusion, in the dose of from 20 to 60 grains.

PILLS OF PRECIPITATED BROWN SULPHUR.

Rx. Brown sulphur precip. 3ij,
balm of Tolu, q. s. to make four-grain pills.

Each pill contains 3½ grains of sulphur. The dose is from 2 to 4 daily in chronic eczema, squamous affections, psoriasis, and in chronic bronchitis.

PILLS OF BROWN SULPHUR OBTAINED BY FUSION.

Rx. Brown sulphur obtained by fusion, 3ij.
Divide into pills of 4 grains.

These two preparations may replace every other formula for the internal administration of sulphur.

2. Exterior Application.

The brown precipitated sulphur ought to be preferred to that obtained by fusion, it is likewise designed for employment as an ointment or pomade.

It exercises a very powerful action on the skin—much more so than that of yellow sulphur.

CERATE OF BROWN PRECIPITATED SULPHUR.

Rx. Brown precipitated sulphur, 3ss.
Simple cerate, 3ij.
Balm of Tolu, ʒi.

For friction in cases of darts.

POMMADE OF BROWN PRECIPITATED SULPHUR.

Rx. Brown precipitated sulphur, 3j.
Balm of Tolu, ʒi.
Axunge ʒiv.

These pommades act more promptly and with greater certainty than all other sulphurized ointments, as the observer may easily convince himself by comparative experiments.—*Presse Méd. Belge, et Revue Méd. Chir.*, tome ix., Sept. 1851.

ON THE ANALYSIS OF ALLOYS OF COPPER AND ZINC.

By MM. RIVOT and BOUQUET.

The authors remark that the common means of effecting the separation of zinc and copper are based upon the use of hydro-sulphuric acid, or hydro-sulphate of potash; the employment of potash itself for this purpose being totally interdicted, as invariably yielding oxide of copper, mixed with a certain proportion of oxide of zinc.

They refer to the analytical investigation of M. Pérouze on the analysis of copper alloys, *Ann. de Chim. et de Physique*, 3me. Série, tomes xvi. et xvii.; and while praising the

exactitude of the processes employed by that philosopher, so far as relates to the quantitative determination of copper, they regret the necessity which existed under his process of estimating the amount of zinc by the loss. This process of M. Pélouze consists in precipitating the copper by a solution of hydro-sulphate of soda, in an alkaline liquor. But the oxy-sulphuret of copper thus obtained does not admit of being easily filtered, on account of the rapid oxidation which it undergoes when exposed to the air. Moreover, as already remarked, the zinc, by this process, must be estimated by the difference.

M. Rivot and Bouquet having occasion to analyse many samples of copper and zinc alloy for the School of Mines, arrived at the conclusion that sulphuretted hydrogen was totally incapable of giving precise results. If the operation be conducted in a slightly acid liquor, the sulphuretted hydrogen precipitates nearly all the zinc, simultaneously with the copper, in the state of sulphuret; if the liquor is strongly acid, there is always a notable portion of sulphuret of zinc thrown down with the sulphuret of copper, whatever may be the degree of the acidity of the liquor.

In seeking another process of separation, the authors discovered that potash, employed with certain precautions, effected a perfect separation of copper from zinc.

The procedure is as follows, and is a modification of a process described by Vauquelin.—*Ann. de Chimie, 1re Série, t. xxviii.*

The alloy is dissolved in nitric acid, diluted with water, and saturated by ammonia. Into the ammoniacal liquor is now put, a slight excess of pure potash in fragments, and the whole is gently heated in the sand bath, until complete decolorization, and until the liquor no longer smells of ammonia. The oxide of copper is now thrown on a filter, and washed with boiling water. Into the alkaline liquor hydro-chloric acid is now poured, until the whole displays an acid reaction, when the zinc is precipitated by carbonate of soda. Before filtration, the solution is heated during seven or eight hours in a sand bath, for the purpose of eliminating free carbonic acid. The precipitate is now filtered, washed with boiling water, dried, separated from the filters, and calcined. The two metals are thus estimated in the state of oxide.

M. Rivot and Bouquet have analysed by this process, the two alloys of

	gr.	gr.
Copper	1.00	0.70
Zinc	1.00	1.10
and have obtained		
Oxide of copper	1.25	0.870
Oxide of zinc	1.260	1.350
corresponding with zinc	1.008	1.08
and the oxide of copper being reduced by a stream of hydrogen, weighed	0.997	0.592

When the proportion of zinc is larger, the analysis is more speedily conducted by employing first sulphuretted hydrogen—redissolving the precipitate by nitro-muriatic acid, rendering the solution ammoniacal—and precipitating the copper by potash. By following this process, the estimation of copper is very exact,—that of zinc being slightly less than truth, because it is divided into two parts.

The two zinc-containing liquors may be united after having freed the one from sulphuretted hydrogen by heat, and rendered the other acid;—and finally the zinc may be precipitated in one quantity.

But in such a liquor, containing as it does a certain amount of potash salt, the zinc must not be precipitated in the state of sulphuret, which would undergo partial oxidation during the process of washing, rendered necessary for the separation of the potash. Carbonate of soda must be employed as a precipitating agent, and even then a bulky precipitate is somewhat difficult to be washed.

The authors conclude by remarking that sulphuretted hydrogen employed to separate metals from acid solutions frequently yields very incorrect results. That it cannot be employed to separate lead from zinc, nor nickel from copper. In the latter case the hydro-sulphuric acid used always precipitates a considerable portion of nickel with the copper,

notwithstanding that the compound solution be made extremely acid.—*Ann. de Chim. et de Phys.—3me Série, Sept. 1851,—tome xxxiii., p. 24.*

ON OZONE, By M. SCHÖNBEIN.

M. Schönbein, pursuing his researches on ozone, has remarked that this body may be formed by substituting for phosphorus, ether; essence of turpentine, or of lemons.

On introducing a small amount of pure ether into a flask filled with oxygen gas, or atmospheric air, and shaking from time to time, the ether had, after the lapse of four months, acquired new properties. Although it does not change the colour of litmus, it decolorizes indigo, converts phosphorus into phosphorous acid, separates iodine from iodide of potassium, peroxidizes the proto-salts of iron, transforms yellow into red prussiate of potash, converts sulphuret of lead into sulphate, &c.—*Journ. de Chim. Méd., No. IX., Sept. 1851.*

ON A NEW METHOD OF TREATING POISONING BY STRYCHNINE.

By M. CH. GUNTHER, Professor of Veterinary Medicine at Hanover.

In Germany where nux vomica is very commonly employed for the destruction of rats and mice, cases of poisoning by strychnia are of frequent occurrence, and thus its treatment is a matter of more consequence than here. M. Ch. Gunther has made some investigations relative to the treatment of this form of poisoning in animals, the result of which is to cause him to place the greatest reliance on bleeding and full doses of opium.

The author mentions several cases in which the above plan of procedure had been perfectly efficacious; one relates to the treatment of his own dog that had become the subject of accidental poisoning by strychnia.

"My dog, remarks the author, five years old, and of great muscular force, was noticed on the 20th of last September, at 7 A.M., to be suffering from the symptoms of poisoning from strychnia. I immediately placed a slip of white hellebore root under his skin, and administered to him at intervals of two hours, a mixture of 2 grains of opium and 2 gros. (8 grammes) of sulphate of soda, in 4 ounces of rain water.

The animal did not vomit, and the spasms augmented. I proceeded in my treatment by giving him the half of a fresh mixture an hour after the first, and drew 1½ ounce of blood. About 9 o'clock he fell into a sort of coma, but the spasms continued although with decreased energy. In this state he remained until 5 o'clock, P.M. when the spasms became greatly increased.

Within half an hour after this I administered to him half of another mixture; he then began to feel the effects of the opium, and slept tranquilly. About 9 o'clock, having awoke, the spasms returned once more, to relieve which, two ounces of blood were drawn, and the mixture repeated as before. He now fell asleep, and remained so all the night.

On September 21, at 7 P.M., the animal was lively, and craved for food and drink. About mid-day his ejections began; they were pale and offensive. From that day forth the dog has remained in good health.—*Journ. de Chim. Méd., ix., Sept. 1851, p. 528.*

ON THE USE OF TARTAR EMETIC FOMENTATIONS IN THE TREATMENT OF CHRONIC RHEUMATISM, &c.

By Dr. CLOCH.

According to the author, a solution of 50 centigrammes of tartar emetic dissolved in 500 grammes of water continuously applied in the manner of fomentation to the affected part, is one of the best means of overcoming superficial inflammations, and merits preference for the promptitude of its activity, and its effects over the generality

of applications. It is not to the revulsive or counter-irritating effect of the tartar emetic, that its agency in this case is attributable, but to a slow absorption. Hence the agency of this substance is more prompt when applied to leech-bites or to a blistered surface. Upon a blistered surface in particular, the application determines towards the second or third day, the formation of an arid shining crust without any sensation of pain or burning. The general functions are troubled in no degree by these topical applications; and, moreover, according to M. Cloch, these effects are more remarkable locally than generally. In order that the results may be as prompt as possible the solution should be applied by a thickly folded but fine cloth.—*Gazzetta Med. Chir. del Trentino and Bulletin Général Therapeutique, tome XLII., 5ème Livraison, Sept. 1851.*

SATISFACTORY EFFECTS OF COD OIL IN CHRONIC RHEUMATISM.

The following is from the *Sardinian Medical Gazette*, of May, 1851:—

A miller, aged forty-three, of a good constitution, but subject to rheumatic affections, entered the hospital of St. Maurice, on the 16th of September, 1850, to be treated for a rheumatic affection of the tarsal, and metatarsal ligaments of both feet; accompanied by excruciating pain, enlargement of the bones, redness, heat, and fever. After an antiphlogistic treatment of some days the malady abated somewhat, though the tumefaction of the joint still remained, and a few days afterwards the knees also began to suffer. Suspecting a syphilitic taint, Dr. Fenoglio made the patient undergo, without advantage, a treatment by mercurials; treatment after treatment followed for a period of three months, but without the least benefit. In the month of January following, still under the impression of a syphilitic taint, iodide of potassium was administered to him, in the dose of 24 grains per diem, but still the articulations remained swollen and the pain did not cease.

At length on February 4, as a last resource, the doctor, Fenoglio, prescribed cod-liver oil daily, three table-spoonfuls for a dose. The result now was most satisfactory; a fortnight after the commencement of this treatment a remarkable amelioration had taken place; a fortnight longer, and the bones began to decrease in size, and the limbs could be moved without great pain.

Finally, after the persistency of this mode of treatment for two months and a half, he left the hospital with no further disease than a slight enlargement of the left scaphoid bone. During the course of treatment he had consumed 87 ounces of cod-liver oil, and without the least inconvenience at any time. His appetite was always good, and no other remedy in conjunction with the oil had been employed except a little acetate of morphia now and then for the sake of producing sleep.

ON THE PROCESS OF EMBALMING, AS PRACTISED BY THE ANCIENT EGYPTIANS.

The human mummies of Egypt, chiefly found in the catacombs of Memphis, and all along the banks of the Nile, are some of them no less than 3400 years old, as is most indisputably proved by deciphered papyri records. From the information contained, in which also there is no reason to doubt that process of embalment from which those mummies resulted was performed in deference to a religious sentiment of the Egyptians. Dr. Büchner relates that a personal friend of his, who has travelled over the greater part of Egypt, Syria, and Palastine, succeeded in decyphering in the records of ancient papyri the method by which embalment was performed.

The operator commenced by making a longitudinal slit into the abdomen, through which opening the intestines were removed. The skull was then opened, and by means of convenient instruments of brass or iron, the brains were removed, partly through the foramen magnum, and partly

through the nasal orifices. In the next place the spinal marrow was cleared out by means of a long copper rod; and in confirmation of the ancient records, the spinal cavity of of certain mummies has been found to contain the broken pointed instrument in question.

The next part of the embalming operation consisted in filling the emptied cavities with a warm powder made up of aromatic plants, of which *myrrh* and *thus* constituted the leading ingredients; these, before being employed, were baked in an oven to incipient charring, and, after the treatment, were mixed with petroleum. The apertures being now closed, the corpse was buried in the sand until all its moisture evaporated; and finally, being wrapped in cloths soaked in bitumen, and deposited in a coffin, the process was complete.

The wood for coffins was generally that of the ficus sycamorus, but occasionally of the cupressus sempervirens, both very indistructible woods. To effectually prevent the access of air, the joinings and apertures were secured by a mixture of petroleum and gypsum, and finally a pictorial representation of the mummy was made outside the coffin.

The foregoing method, it would seem, was only employed by the rich; mummies of the poorer order were made simply by filling the large cavities of the dead body with melted asphalt, brought from the coast of the Red Sea. The operations were not performed all at once, but by installments, a little fused asphalt being poured in from time to time until the coffin would hold no more. Although the latter process of embalment was confined to the lower orders, mummies thus prepared are the more indistructible of the two.

Chemical Record

AND

DRUG PRICE CURRENT.

SATURDAY, OCTOBER 11, 1851.

MISMANAGEMENT OF THE PHARMACEUTICAL SOCIETY.

WE publish elsewhere, amongst our letters from correspondents, a communication from a member of the Pharmaceutical Society, who formerly was on the council. To expatiate on that document would be unnecessary,—it speaks for itself; making known the disgraceful mismanagement of an institution which was intended for the benefit of the pharmaceutical community; not for conferring patronage on Mr. Bell—nor for administering to the exhausted finances of a gentleman who appears from our correspondent's letter to have emerged from the *res augusta* by the acceptance of responsibilities which are far above his power to discharge.

If, as our correspondent asserts, every member of the council be nominated, or feels that he is in office, by the sufferance of Mr. Bell, and that every paid officer of the society, from the lecturers down to the porter, is an officer of that gentleman,—there can be no hope for the society under its present constitution as an establishment for advancing the interests of the chemists and druggists.

It may be very agreeable to the pride of Mr. Bell thus to play the game of Premier on a smaller scale, and to scatter favours on his friends; it may suit the interests of a laborious pharmaceutical author, desirous somewhat late in the day, to struggle from the apothecaries' ranks into those of the physicians—to respond to the patronage of Mr. Bell; but in no way can this political connection

subserve the interests of the class for whose special benefit the Pharmaceutical Society was first instituted:—and the sooner it is altered the better.

This is emphatically the time for chemists and druggists to come forward in a body and vindicate the honour of their profession—the principles which the Pharmaceutical Society was intended to uphold. Not to establish a corporation founded on the worst abuses of a close borough,—in which all healthy expression of sentiment, all independence of action, all notions of economic administration, are to be merged,—but an association of chemists and druggists actuated by the one desire of ministering to the educational necessities, elevating the social condition,—and advancing the several interests of their class.

And now in the prosecution of our remarks let us institute a comparison between the illiberality of the Pharmaceutical Society and the opposite quality evinced by King's College, as recently manifested to a representative of the **CHEMICAL RECORD**.

Desirous of supplying our readers with reports of such lectures as might be interesting to them, we determined, amongst others, to obtain outlines of those by Professor Tennant, of King's College, on Mineralogy, and by Dr. Pereira, on *Materia Medica*, to be delivered at the Pharmaceutical Society.

The former gentleman most courteously gave our representative a reporter's ticket, in the ordinary form: but at the Pharmaceutical Society the treatment he experienced was far different. Applying there, the official told him Dr. Pereira was the source from which the ticket alone could be obtained. To Dr. Pereira, therefore, our reporter went, when this gentleman referred the decision to the Pharmaceutical Society; and, on being informed that a previous application to the society had been made, he shifted his grounds of objection altogether, and declined absolutely!

It is necessary to remark that no jealousy of any specific journal could have operated with Dr. Pereira, for the reporter had no necessity for mentioning the name of our journal. Dr. Pereira's objections were general, not specific. He objected to a report of his lecture in any journal except the private organ of Mr. Bell;—at least this was the necessary inference!

Now, holding it to be impossible to report efficiently lectures delivered twice a week in a journal published once a month, we leave our readers to judge whether the illiberality of the society was designed for the benefit of Mr. Bell's journal, or for the members and associates of the society.

Although the discourtesy thus evidenced to our representative furnished a ground of just complaint, we made none; but providing this gentleman (who is a member of the medical profession) with the stranger's entrance fee, we desired him to procure a ticket.

Presenting himself at the Pharmaceutical Society with this object, will it be credited that both fee and ticket were declined? The official at the door objected to afford any reasons for this course, merely contenting himself with saying that, as his private opinion would not determine the matter, he preferred not to tender it.

The mere expression of this discourtesy will be sufficient, we are convinced, to demonstrate to the members of the

Pharmaceutical Society the real measure of Mr. Bell's anxiety to forward their interests. We say emphatically Mr. Bell, because we have good reason to know that the members of the society repudiate the illiberality with which the Toryism of a mere clique is made to weigh down every good and liberal feeling, not only of the members and associates, but even of a large section of the council.

And now in conclusion we beg to offer our best thanks to the numerous members of the society who have spontaneously offered to furnish us with reports of Dr. Pereira's lectures; sources of information that we accept in the spirit of good feeling with which they were tendered. A full report of Dr. Pereira's lectures will appear, notwithstanding the illiberality of the Tory clique of the Pharmaceutical Society.

SPECIFICATIONS OF CHEMICAL PATENTS.

Thomas Huckvale, of Choice-hill, in the county of Oxford, for improvements in treating mangel wurzel, and in making drinks and other preparations therefrom. Date of patent, April 2, 1861. Date of enrolment, October 2, 1861.

The patentee classes his improvements under four heads, which, with the mode of effecting such improvements, are as follow:—

First, the treating mangel wurzel so as to fit it to be used as a substitute for, or in combination with, coffee. For this purpose the mangel wurzel is washed, and cut into small pieces of the size of peas or beans, then dried, roasted, and ground in the same way as coffee is ordinarily prepared for use.

Secondly, the treating the leaves of the mangel wurzel in such a manner that they may be used as a beverage. This is effected by first cutting the leaves into strips or shreds, and submitting them to artificial heat, by placing them on a hot plate or surface, this drying process being continued until the leaves begin to char; the product so obtained is to be used as a substitute for tea.

Thirdly, the treating of mangel wurzel in such a manner as to obtain a fermented beverage. For this purpose the mangel wurzel is cut into small pieces, and placed in any suitable vessel, where it is allowed to heat and ferment for two or three days, the temperature of the place being kept at about 70° F.; water is then to be added, and the whole allowed to stand a few hours; the liquid contents of the vessel are then strained off and tunned; the product will be a fermented beverage, similar to cider or perry.

Fourthly, the treating of mangel wurzel in such a manner that it may be employed in the preparation of wort. To effect this the mangel wurzel is washed, and cut into small pieces as in the preparation of the substitute for coffee; it is then submitted to the heating action of a kiln, or other suitable heated surface, until it has become slightly charred; the product thus obtained will afford, when mashed in the same way as malt, a wort which may be used in all cases to which wort is applied.

The patentee claims the several methods above described of treating mangel wurzel.

To COLOUR GOLD.—1. Green.—Take of saltpetre 1 oz. 10 dwts., sal ammoniac 1 oz. 4 dwts., Roman vitrol 1 oz. 4 dwts., verdigris 18 dwts. Mix them well together, and dissolve a portion in water, as occasion requires. The work must be dipped in these compositions, applied to a proper heat to burn them off, and then quenched in water or vinegar. 2. Red.—To 4 oz. of melted wax, add, in fine powder, 1½ oz. of red ochre, 1½ oz. of verdigris, calcined till it yield no fumes, and ½ oz. of calcined borax; mix them well together. It is necessary to calcine the verdigris, or else, by the heat applied in burning the wax, the vinegar becomes so concentrated as to corrode the surface and make it appear peckled.

PRICE CURRENT OF DRUGS, &c.

Articles having bd. or bond annexed are sold at short price exclusive of duty; when no duty is affixed the article is free. Add 5 per cent. to the duty on all articles excepting those having an asterisk prefixed. F. means foreign; B.P. British possessions.

DRUGS, &c.		Price.	
		£. s. d.	£. s. d.
ALKANNET Root ..	..cwt.	1 14 6	2 10 0
ALOE, Barbadoes ..	..	1 10 0	6 0 0
Hepatica ..	..	1 10 0	5 0 0
Cape ..	..	1 5 0	1 18 0
ALUM, British ..	..ton	7 10 0	8 5 0
Roch ..	..cwt.	1 0 0	1 4 0
AMBERGRIS, Grey ..	..oz.	4 8 0	7 0 0
ANCHOVIES ..	..dble. brl.	17 0 0	18 0 0
ANGELICA Root ..	..cwt.	1 0 0	1 5 0
ANNATTO, Flag ..	..lb.	1 0 0	1 2 0
Roll ..	..	0 10 0	1 0 0
ANTIMONY, Crude ..	..cwt.	1 8 0	0 0 0
Ore ..	..ton.	18 0 0	0 0 0
Regulus Cps. ..	..cwt.	2 4 0	3 0 0
Bowls ..	..	2 15 0	2 13 0
ARROW Root ..	..lb.	0 2 1/2	0 0 0
ARSENIC, White ..	..cwt.	17 0 0	18 0 0
Red ..	..	0 0 0	0 0 0
English White ..	..	13 6 0	1 0 0
Yellow ..	..	19 0 0	1 0 0
ARGOL, Bologna ..	..cwt.	2 0 0	2 12 0
Florence White ..	..	2 0 0	2 8 0
Red ..	..	2 0 0	2 5 0
Naples White ..	..	1 18 0	2 5 0
Red ..	..	1 12 0	1 13 0
Sicily White ..	..	1 8 0	1 16 0
Red ..	..	1 8 0	1 10 0
French ..	..	1 14 0	2 7 0
Cape ..	..	1 15 0	2 11 0
ASPHALTUM, Egyptian ..	..	2 10 0	4 15 0
BORACIC ACID ..	..cwt.	2 12 0	2 13 0
BALSAM, Canada ..	..lb.	0 9 1/2	0 10 1/2
Capavi ..	..	0 10 0	1 2 0
Peru ..	..	5 0 0	5 2 0
Tolu ..	..	3 8 0	4 0 0
BARILLA, Spanish ..	..ton	0 0 0	0 0 0
Teneriffe ..	..	0 0 0	0 0 0
Sicily ..	..	0 0 0	0 0 0
East India ..	..	0 0 0	0 0 0
BARK, Peruvian, pale ..	..lb.	1 8 0	2 6 0
Good ..	..	0 0 0	2 0 0
Mid., do. ..	..	1 1 0	1 2 0
Crown ..	..	1 3 0	2 2 0
Yellow, Flat ..	..	3 0 0	4 4 0
Quill ..	..	2 0 0	6 0 0
Red, Flat ..	..	7 0 0	0 0 0
Quill ..	..	3 0 0	4 6 0
Cascarilla ..	..cwt.	1 0 0	1 15 0
Quercitron ..	..	8 8 0	9 6 0
Oak, English...per load	..	13 0 0	14 0 0
Foreign...per ton.	..	3 0 0	6 5 0
New S. W. ..	..	5 0 0	8 0 0
BERRIES, Bay ..	..cwt.	19 6 0	1 8 0
Juniper, Italian..	..	7 6 0	8 0 0
German..	..	8 0 0	12 0 0
Turkey, Yellow..	..	3 15 0	6 0 0
Persian, do. ..	..	8 0 0	14 0 0
BLACK LEAD, E. I. ..	..cwt.	5 0 0	16 0 0
Malaga ..	..	10 0 0	1 5 0
German ..	..	1 0 0	1 3 0
Dust ..	..	9 0 0	12 0 0
BORAX OR TINCAL ..	..cwt.	2 0 0	0 0 0
E. I. Refined ..	..	2 17 0	2 18 0
English Refined ..	..	3 10 0	3 12 0
BRIMSTONE, Rough..	..ton	9 0 0	9 10 0
Roll ..	..	12 0 0	0 0 0
CAMPHOR, Unrefined ..	..cwt.	3 7 6	0 0 0
Dutch..	..	3 10 0	0 0 0
* Refined ..	..lb.	1 0 0	1 1 0
CANTHARIDES, bd. ..	..	3 0 0	3 6 0
CAJERS, French ..	..cwt.	7 0 0	12 0 0
Capotta ..	..	6 0 0	7 10 0
CARDAMOMS, Malabar ..	..lb.	2 6 0	3 0 0
Long Longe..	..	3 0 0	3 4 0
Ceylon ..	..	1 4 1/2	1 5 1/2
CASTOR OIL, America ..	..lb.	0 0 0	0 0 0
E. I., bd. ..	..	0 2 1/2	0 0 0
CHILINA, E. I. ..	..cwt.	15 6 0	1 5 0
CHINA ROOT ..	..cwt.	10 0 0	1 0 6
COCHINEAL, Honduras Black ..	..lb.	3 2 0	4 10 0
Silver ..	..	2 10 0	3 6 0
Mexican Black ..	..	3 2 0	3 2 0
Silver ..	..	2 11 0	3 4 0
COBALT ..	..lb.	0 0 0	0 0 0
COCULUS INDICUS ..	..cwt.	1 4 0	1 5 6

DRUGS, &c., continued.

		Price.		B.P. 4d. F. 6d. per lb.
		£. s. d.	£. s. d.	
COFFEE, Jamaica, triage and ord.	..	1 13 0	2 17 0	{
good and fine ord.	..	1 18 0	2 6 0	
low to good middling	..	2 8 0	3 10 0	
fine middling & fine	..	3 12 0	4 10 0	
Demerara, triage & ord.	..	0 0 0	0 0 0	{
good and fine ord.	..	0 0 0	0 0 0	
low to good mid.	..	0 0 0	0 0 0	
Berbice, triage and ord.	..	0 0 0	0 0 0	
good and fine ord.	..	0 0 0	0 0 0	{
low to fine middling	..	0 0 0	0 0 0	
Dominica and St. Lucia,	..	0 0 0	0 0 0	
triage and ordinary	..	0 0 0	0 0 0	
good and fine ord.	..	0 0 0	0 0 0	{
low to good middling	..	0 0 0	0 0 0	
Ceylon, ordinary to very	..	1 19 6	2 0 6	
good ord. native	..	2 5 0	2 14 0	
fine ord. to mid. plu.	..	2 16 0	3 15 0	{
good mid. to fine do.	..	2 0 0	2 10 0	
Mocha, ord. & ungarned	..	3 6 0	3 15 0	
clean garbled ..	..	4 0 0	4 15 0	
fine ..	..	1 17 0	2 0 0	{
Sumatra, Padang, &c. ..	..	2 2 0	2 12 0	
Java ..	..	1 18 0	2 10 0	
Myore with certificate	..	1 15 0	1 18 0	
Brazil, ord. to fine ord	..	2 0 0	2 15 0	{
ex. fine plant. kind	..	1 18 0	1 19 0	
St. Domingo ..	..	1 18 0	2 0 0	
Havannah, ord. to good.	..	2 2 0	2 10 0	
fine ordin. to mid.	..	1 18 0	2 2 0	{
Cuba, ord. to good ord.	..	2 4 0	2 15 0	
fine ord. to middling	..	1 18 0	2 10 0	
Porto Rico ..	..	1 18 0	2 12 0	
La Guayra ..	..	2 2 0	3 5 0	{
Costa Rica ..	..	2 2 0	2 10 0	
COCOA, Trinidad, red ..	..	1 16 0	2 2 0	
grey ..	..	1 14 0	2 3 0	
Grenada ..	..	1 7 0	1 9 0	{
Para, St. Domingo, and Bahia	..	1 12 0	1 13 0	
Guayaquil ..	..	0 6 1/2	1 2 0	
COLOCYNTH, Turkey ..	..lb.	0 11 0	1 6 0	
Spanish ..	..	1 5 0	2 19 0	{
COLOMBO ROOT ..	..	1 10 0	2 15 0	
COFFERAS, Green, bc. ..	..ton	8 0 0	1 10 0	
Blue ..	..	2 18 0	3 8 0	
CREAM TARTAR, French ..	..	3 5 0	3 8 0	{
Venetian ..	..	4 15 0	5 0 0	
CUBBS ..	..cwt.	18 0 0	18 6 0	
CUTCH ..	..	3 10 0	9 15 0	
DRAGON'S BLOOD ..	..lump	8 0 0	14 10 0	{
Reed ..	..	45 0 0	80 0 0	
DYEWOODS:	..	0 0 0	0 0 0	
Brazil ..	..ton	13 15 0	28 15 0	
Barwood, Angola ..	..	0 0 0	0 0 0	{
Camwood ..	..	0 0 0	0 0 0	
Fustic, Brazil ..	..	8 10 0	9 0 0	
Cuba ..	..	4 0 0	5 10 0	
Jamaica..	..	4 0 0	4 10 0	{
Spanish ..	..	0 0 0	0 0 0	
Zante ..	..	6 10 0	6 15 0	
Logwood, Campeachy ..	..	5 0 0	5 10 0	
Honduras ..	..	3 10 0	4 0 0	{
Jamaica ..	..	4 0 0	5 0 0	
St. Domingo ..	..	14 0 0	15 0 0	
Nicaragua, Lima ..	..	12 0 0	17 0 0	
solid ..	..	6 10 0	12 0 0	{
small and mid.	..	4 15 0	5 15 0	
Red Sanders ..	..ton	2 8 0	5 4 0	
* ESSENTIAL OILS ..	..lb.	6 3 0	5 4 0	
Gloves, bd. ..	..	3 6 0	7 0 0	{
Caraway ..	..	4 0 0	11 0 0	
Lavender ..	..	4 0 0	0 0 0	
Peppermint, bd. ..	..	5 6 0	5 2 0	
Spike ..	..lb.	10 0 0	10 3 0	{
Aniseed, bd. ..	..	0 3 1/2	0 4 1/2	
Cassia, bd. ..	..oz.	0 8 0	2 6 0	
Cayaput, bd. ..	..	0 2 1/2	0 4 0	
Cinnamon, bd. ..	..	0 4 1/2	0 5 1/2	{
Mace (expd.), bd. ..	..	9 0 0	9 9 0	
Nutmegs, bd. ..	..lb.	7 6 0	8 3 0	
Bergamot ..	..	6 9 0	7 0 0	
Lemon ..	..	1 8 0	2 6 0	{
Orange ..	..	3 2 0	3 0 0	
Rosemary ..	..oz.	13 6 0	1 0 0	
Thyme ..	..lb.	1 5 0	0 0 0	
Otto Roses ..	..	14 0 0	1 4 0	{
Almonds ..	..cwt.	3 0 0	3 15 0	
GALANGAL ROOT, bd. ..	..	2 10 0	3 7 0	
GALLS, sorts ..	..	4 12 0	4 15 0	
Green or White ..	..	3 10 0	5 0 0	{
Blue ..	..bd.	1 1 0	1 2 0	
E. I. Blue ..	..cwt.	1 5 0	1 0 0	
GENTIAN ROOT ..	..	0 0 0	0 0 0	
GLUE, Best Town ..	..	1 10 0	2 5 0	{
Interior ..	..	2 0 0	2 4 0	
Foreign ..	..	2 0 0	2 4 0	
GUINEA GRAINS, bd. ..	..	2 0 0	2 4 0	

nominal.

{ B.P. 1d. F. 2
per lb.

s. per lb

1s. per lb.

5s. per cwt.

DRUGS, &c., continued.

	Price.		Price.	
	£. s. d.		£. s. d.	
GUTTA SERENA lb.	0 8 0		0 10	
GUMS:				
Ammoniac, Lp. .. .cwt.	9 6 0	1 10 0	0	
Drop	1 15 0	3 15 0	0	
Arabic, E. I.	1 0 0	4 12 0	0	
Cape	12 0 0	1 2 0	0	
Turkey, fine	8 10 0	10 0 0	0	
2nds and 3rds	2 10 0	6 0 0	0	
Australian	1 17 0	2 0 0	0	
Barbary, Brown	1 15 0	2 10 0	0	
White	3 5 0	2 15 0	0	
Gedda	5 0 0	6 0 0	0	
ANIMI, washed	5 0 0	12 0 0	0	
scraped	6 0 0	12 12 6	0	
Copal	0 6 0	2 8 0	0	
ASAPETIDA	10 0 0	4 10 0	0	
BENJAMIN, 3rds	3 10 0	9 10 0	0	
1st and 2nds	10 0 0	30 0 0	0	
DAMMAR	1 10 0	2 6 0	0	
GAMBOGE	5 0 0	11 12 6	0	
GALBANUM	2 10 0	3 0 0	0	
GUAIACUM	0 6 0	1 0 0	0	
MYRRH, E. I. .. .cwt.	2 0 0	10 0 0	0	
MASTIC	3 0 0	6 6 0	0	
OLIBANUM .. .cwt.	8 0 0	3 0 0	0	
SANDRACH	2 6 0	3 10 0	0	
SENEGAL, garbled	3 0 0	4 0 0	0	
TRAGACANTH, Picked	13 0 0	17 0 0	0	
Sorts	3 10 0	10 0 0	0	
LAC, Sticklac, Bengal	17 0 0	1 15 0	0	
Siam, &c.	2 10 0	3 8 0	0	
Shellac, .. .cwt.	2 2 0	2 5 0	0	
Ruby	2 5 0	2 10 0	0	
Orange	2 5 0	2 16 0	0	
Black	1 1 0	2 3 0	0	
Blood	2 0 0	2 8 0	0	
Seedlac .. .cwt.	1 0 0	2 0 0	0	
HELLBORE ROOT .. .cwt.	1 18 0	0 0 0	0	
HONEY, Fine	1 8 0	3 0 0	0	
ICELAND MOSS	0 2 0	0 2 0	0	
INDIA RUBBER, solid	0 8 0	0 8 0	0	
bottles	1 0 0	1 8 0	0	
small	1 0 0	2 6 0	0	
INDIGO	4 2 0	4 7 0	0	
Bengal, fine blue	5 0 0	6 4 0	0	
good and fine violet and purple	5 0 0	5 9 0	0	
ordinary and middling	4 4 0	5 0 0	0	
good and fine copper	5 4 0	5 8 0	0	
ordinary and middling	3 8 0	5 0 0	0	
Consumers, good and fine	4 8 0	5 2 0	0	
ordinary and middling	3 8 0	4 6 0	0	
Java, good and fine	4 8 0	4 6 0	0	
Oude, good and fine	3 8 0	4 6 0	0	
ordinary and middling	2 2 0	3 2 0	0	
Madras, good and fine	3 1 0	4 3 0	0	
ordinary and middling	1 9 0	3 0 0	0	
Kurrup, good and fine	2 6 0	5 6 0	0	
ordinary and middling	2 0 0	3 5 0	0	
Manilla good and fine	Withdrawn.			
ordinary and middling				
IPERCACUANHA	4 2 0	4 4 0	0	
ISINGLASS LEAF, 1st sort	10 0 0	13 6 0	0	
2nd sort	9 0 0	10 0 0	0	
Simovia	2 0 0	2 9 0	0	
Siberia Purse	5 0 0	6 0 0	0	
Short Staple, 1st	8 0 0	14 0 0	0	
Long ditto	10 0 0	14 0 0	0	
ISINGLASS, Brazil	0 6 0	5 6 0	0	
JALAP	1 4 0	2 2 0	0	
JUICE OF LEMON	0 10 0	1 0 0	0	
LAC DYE, Fine	1 8 0	2 4 0	0	
Good	1 2 0	1 5 0	0	
Middling	1 0 0	1 2 0	0	
Ordinary	0 4 0	0 11 0	0	
Lake	0 3 0	0 8 0	0	
LIQUORICE Paste, Ital. .. .cwt.	3 5 0	3 12 6	0	
Block	4 0 0	5 15 0	0	
MADDERS, Dutch Crop .. .cwt.	2 6 0	2 10 0	0	
Ombro	2 2 0	2 5 0	0	
Gamene	1 5 0	1 10 0	0	
Mull	8 0 0	12 6 0	0	
French	0 0 0	0 0 0	0	
Spanish	1 10 0	2 0 0	0	
MADDER ROOT, Turkey	1 6 0	1 10 0	0	
MAGNESIA, English	2 0 0	2 3 0	0	
MANNA, Flakey	3 0 0	3 6 0	0	
Sicily	1 0 0	1 6 0	0	
MUNJERT, E. I. .. .cwt.	18 0 0	1 2 0	0	
METALS:				
COFFEE Brl. Cakes	88 10 0	0 0 0		
Tile	87 10 0	0 0 0		
Sheets	0 10 0	0 0 0		
Bottoms	0 11 0	0 0 0		
Old	0 84 0	0 0 0		
S. American	88 0 0	0 0 0		
Foreign Cake	0 0 0	0 0 0		
Foreign Tile	0 0 0	0 0 0		

B.P. 5 F. 10s.

Public Sale Prices.

F 1 0 0 cwt.
B.P. 10 0 cwt.

per cwt. un-
wrought 4s.
B.P. 8s. 9d. F.
wrought B.P.
5s. F. 10s. old
B.P. 3s. 6d.
old F. 7s. 6d.

DRUGS, &c., continued.

	Price.		Price.	
	£. s. d.		£. s. d.	
IRON, British Bars	5 2 6	5 10 0	0	
Rods	6 5 0	6 15 0	0	
Hoops	7 0 0	7 10 0	0	
Sheet	7 15 0	8 5 0	0	
Cargo in Wales Bars	4 7 6	4 12 6	0	
Pigs No. 1 Wales	3 0 0	4 0 0	0	
No. 1 Clyde	1 19 0	2 0 0	0	
Russian .. .C.C.N.D.	0 0 0	0 0 0	0	
P.S.I.	0 0 0	0 0 0	0	
Archangel	0 0 0	0 0 0	0	
Swedish	11 10 0	12 10 0	0	
LEAD, British:				
Pigs	16 10 0	0 0 0	0	
Sheet milled	18 0 0	18 5 0	0	
Shot Pat.	19 10 0	20 10 0	0	
Red or Minium	18 10 0	19 0 0	0	
White	23 0 0	25 0 0	0	
Litharge	19 0 0	0 0 0	0	
Pig Spanish	0 0 0	0 0 0	0	
American	0 0 0	0 0 0	0	
STEEL, English	0 0 0	0 0 0	0	
Swedish Keg	15 0 0	15 10 0	0	
Fagvot	15 10 0	16 0 0	0	
TIN, Blocks	4 4 0	0 0 0	0	
Ingots	4 10 0	0 0 0	0	
In Bars	4 5 0	0 0 0	0	
Banca .. bd.	3 19 6	4 0 0	0	
Strait .. bd.	0 0 0	3 18 0	0	
Peruvian .. bd.	0 0 0	0 0 0	0	
Plates, p. bx. of 225 Sheets:				
No. 1 C 133 by 10 in. ..	1 4 0	0 0 0	0	
1 X	1 12 0	0 0 0	0	
1 XX	0 0 0	0 0 0	0	
SPELTER on the spot	14 0 0	0 0 0	0	
Delivery	14 2 6	0 0 0	0	
ZINC, English Sheet	21 0 0	0 0 0	0	
PLATINA ORE	0 0 0	0 0 0	0	
ORSIDW	0 0 0	0 0 0	0	
MUSK, good and fine	10 0 0	1 5 0	0	
NUX VOMICA, bd. .. .cwt.	7 0 0	9 6 0	0	
OILS—Imperial measure:				
Olive, Florence, 4 chest ..	15 0 0	18 0 0	0	
Lucas, jars	5 0 0	0 0 0	0	
Gallipoli, 225 gls.	40 0 0	41 0 0	0	
Spanish, ditto	38 0 0	39 10 0	0	
Linseed .. cwt.	1 11 0	0 0 0	0	
Rape, Pale	1 12 0	1 15 0	0	
Brown	1 12 0	1 18 0	0	
Cod	36 10 0	0 0 0	0	
Seal, Pale	34 10 0	0 0 0	0	
Brown, yel., and straw ..	31 0 0	34 0 0	0	
Sperm	84 0 0	85 0 0	0	
Head Matter	90 0 0	96 0 0	0	
Whale, Greenland	0 0 0	0 0 0	0	
South Sea	31 0 0	33 0 0	0	
Cocoa Nut .. .cwt.	1 10 0	1 15 6	0	
Palm .. .cwt.	27 10 0	28 0 0	0	
OLIVES, French 4 bars .2 gals	3 0 0	4 0 0	0	
Spanish, keg 2 galls. ..	2 0 0	10 0 0	0	
OPIMUM, Turkey, bd	2 6 0	14 0 0	0	
Egyptian	7 6 0	8 6 0	0	
ORCHELLA, Angola	35 0 0	0 0 0	0	
Cape de VerJ	25 0 0	35 0 0	0	
Madeira	30 0 0	0 0 0	0	
ORPIMENT, F. India	0 0 0	0 0 0	0	
ORANGE FLOWER water .. lb.	0 8 0	0 0 0	0	
Peel	5 0 0	0 0 0	0	
ORRIS ROOT	1 18 0	2 2 0	0	
PELLITORY ROOT	0 8 0	0 0 0	0	
PINK ROOT	0 5 0	0 8 0	0	
PITCH, British .. .cwt. ..	7 6 0	0 0 0	0	
Archangel	7 6 0	0 0 0	0	
Stockholm	12 0 0	0 0 0	0	
Burgundy	0 0 0	0 0 0	0	
PUMICSTONE, sorts	5 0 0	8 0 0	0	
QUASSIA	6 0 0	8 0 0	0	
QUICKSILVER	3 4 0	0 0 0	0	
RHATANIA ROOT	0 6 0	0 8 0	0	
RHUBARB, round	0 8 0	3 3 0	0	
Flat	0 8 0	3 3 0	0	
Dutch, trimd.	2 6 0	3 3 0	0	
Russian	10 0 0	12 0 0	0	
SACCHARUM SATURNI, bd. .. lb.	0 0 0	0 0 0	0	
SAFFRON, Spanish	1 0 0	1 5 0	0	
*SAGO common	10 0 0	10 6 0	0	
Pearl	17 6 0	1 5 0	0	
Sago Flour	14 0 0	0 0 0	0	
SAL AMMONIAC, E. I. .. .cwt.	1 10 0	1 13 0	0	
English, Refined	1 18 0	0 0 0	0	
SALTS, Glauber	6 6 0	7 0 0	0	
Epsom	6 0 0	6 0 0	0	
SALEP	18 15 0	14 5 0	0	
SARSAPARILLA, Brazil .. lb.	0 10 0	1 3 0	0	
Honduras	0 10 0	1 6 0	0	

6 0
0 0B.

10 per cwt.

5 0 p. cwt.

2 0 0 gall.
0 1 0 p. lb.

DRUGS, &c., continued.		Price.		DRUGS, &c., continued.		Price.	
		£. s. d.	£. s. d.			£. s. d.	£. s. d.
SASSAPARILLA, Vera Cruz		0 4 @	0 5	TALLOW:			
Jamaica ..		1 6 @	3 1	Graves ..		9 0 @	0 0
SASSAPRAS ROOT .. ton	10	0 0 @	12 0 0	Good Dregs ..		6 0 @	0 0
SAPFLOWER, E. I. .. cwt.	2	10 0 @	7 10 0	PRICES OF CANDLES, per doz.:			
Bombay ..		15 0 @	2 0 0	Mould Candles ..		6 0 @	7 0
SHUMAC, Malaga .. cwt.		12 0 @	12 6	Store ditto ..		4 6 @	5 6
Stilly ..		14 6 @	15 0	TAMARINDS, West Ind. .. cwt.	1	5 0 @	2 0 0
Trieste ..		4 6 @	6 6	East Ind., bd.		12 0 @	16 0
SALTPETRE, Rough ..	1	5 6 @	1 9 0	*TAPIOCA .. lb.		0 1 1/2 @	0 4 1/2
British, Refined	1	9 6 @	1 10 0	TEA: bd.			
Nitrate of Soda	14	6 @	15 0	Bohea, Canton, & Waping		0 6 @	0 7
British, Refined ..		0 0 @	0 0	Fokien ..		0 0 @	0 0
SOAMMONT, Smyrna .. lb.		5 0 @	7 0	Congou, ordinary and out			
Alasppo, 2nds	10	0 @	15 0	of condition ..		0 9 1/2 @	0 9 1/2
fine	1	8 0 @	1 15 0	good ordinary ..		0 9 1/2 @	0 10 1/2
SEEDS, Aniseed .. cwt.	2	2 0 @	3 5 0	mixed blackish leaf ..		0 10 1/2 @	0 10 1/2
German ..	2	2 0 @	3 5 6	rather blackish leaf ..		0 11 @	0 11 1/2
E. I. Star ..	3	14 0 @	3 16 0	blackish leaf ..		0 11 1/2 @	1 0
Cummin ..	2	15 0 @	3 10 0	ditto rather strong to			
Caraway, Foreign	19	0 @	1 10 0	strong ..		1 0 1/2 @	1 1
SENEGA ROOT .. lb.		0 6 @	1 0	Pekoe kind and flavour		1 1 1/2 @	1 6
SENEGA, Alexandria .. lb.		0 2 @	0 6	Ning Yung, fair to fine		0 11 @	1 6
Smyrna ..		0 0 @	0 0	Pouchong ..		0 9 @	1 0
East India ..		0 0 1/2 @	0 4	Caper, chests ..		0 0 @	0 0
Tinnevely ..		0 8 1/2 @	1 2	do. in 10 lb. Catty boxes		0 11 @	1 6
SMELTS, Saxon, FFFE .. lb.		1 2 @	0 0	Campt, common ..		0 0 @	0 0
FFFFE ..		1 7 @	0 0	good to fine ..		0 0 @	0 0
Danish, FFFE ..		1 3 @	0 0	Souchong, ordinary to good		0 9 1/2 @	1 2
FFFFE ..		1 8 @	0 0	fine ..		1 4 @	2 0
SWAKE ROOT .. lb.		0 4 @	0 8	Flowery Pekoe, flat		1 0 @	1 3
SOAP, Naples, soft ..		1 6 @	1 9	fair to fine ..		1 6 @	2 8
Castile, hard .. cwt.	3	0 0 @	0 0	very fine and flowery ..		2 4 @	3 0
British, Mottled	2	2 0 @	3 4 0	Black leaf Pekoe or Hong			
Yellow ..	1	18 0 @	2 2 0	Muey ..		0 10 @	1 4
White ..	2	14 0 @	0 0	Orange Pekoe, faint & odd		0 11 @	0 11 1/2
Scented ..		0 0 @	0 0	common to fine plain ..		1 0 @	1 1
Windsor ..		0 0 @	0 0	common to fine scented		1 1 @	1 9
Oil ..		0 0 @	0 0	Twankay, common ..		0 10 @	0 11
Soft E. B. ..	1	2 0 @	0 0	good ..		1 0 1/2 @	1 1 1/2
B. S. ..		0 0 @	0 0	fine to Hyson kind ..		1 2 @	1 3
B. ..		0 0 @	0 0	Hyson Skin, common ..		0 10 @	0 11
SODA .. ton	5	17 6 @	0 0	good to fine ..		1 0 @	1 2
ASHES, Canada Pot 1st. cwt.	1	10 0 @	0 0	Hyson, common ..		1 1 @	1 3
Pearl 1st	1	8 0 @	1 9 0	fair to good ..		1 4 @	1 10
United States Pot		0 0 @	0 0	fine ..		2 0 @	2 6
Pearl		0 0 @	0 0	extra fine ..		2 10 @	3 10
Gey, bd. .. gallon		4 0 @	0 0	Young Hyson, common ..		0 8 1/2 @	1 1
SPICES—				good to fine ..		1 2 @	2 7
Cassia Lignea, ord. to mid.	5	0 0 @	5 5 0	Imperial, common ..		1 2 @	1 4
good to fine	5	6 0 @	5 10 0	good to fine ..		1 5 @	2 6
Cassia Buds	6	5 0 @	0 0	Gunpowder, common ..		0 8 @	1 7
Cinnamon, Ceylon, 1st quality	1	6 @	3 4	good to fine ..		1 9 @	4 0
2d ..		0 8 @	2 4	TURNERIE, Bengal .. cwt.		15 0 @	17 0
3d ..		0 8 @	1 10	Java ..		10 0 @	13 0
Malabar ..		0 0 @	0 0	Madras ..		10 0 @	15 6
Telliecherry ..		0 8 @	1 10	TERRA JAPONICA .. cwt.		16 0 @	16 6
Cloves, Amboyna ..		0 7 @	0 9	Sienna ..		1 2 @	1 4 0
Bourbon & Zanzibar	0	5 1/2 @	0 6 1/2	VALONIA, Smyrna .. ton		15 0 @	17 0 0
Penang ..		0 10 @	1 2	Picked Morea ..		13 0 @	14 0 0
Ginger, Bengal ..	15	0 @	9 10 0	VANILLAS, Brazil .. lb.		10 0 @	2 12 6
Malabar ..	16	0 @	3 3 0	Vera Cruz ..		1 5 0 @	1 10 0
Jamaica ..	2	0 0 @	10 0 0	VERDIGRIS, Foreign ..		0 9 @	0 10
Barbadoes ..		0 0 @	0 0	English ..		1 3 @	0 8
Mace ..	1	10 @	2 7	VERMILION, China .. lb.		4 6 @	4 7
Nutmegs, brown ..	2	0 @	3 9	English ..		5 0 @	0 0
lined ..	1	4 @	3 0	VITRIOL, blue ..		1 8 0 @	1 10 0
Pepper, bd. Malabar, heavy shot	0	2 1/2 @	0 3 1/2	Foreign, white ..		14 0 @	0 0
light and half heavy	0	2 1/2 @	0 3 1/2	English, ditto ..		1 4 0 @	1 5 0
Eastern ..	0	3 @	0 3 1/2	Oil of ..		0 1 @	0 9
white ..	0	6 @	0 10 1/2	WAX, Mogadore .. cwt.		5 17 6 @	6 10 9
long ..		0 0 @	0 0	American ..		5 5 0 @	0 0
Pimento ..	0	5 1/2 @	0 5 1/2	Russian ..		7 10 0 @	0 0
SPONGES, fine .. lb.		9 0 @	1 5 0	Hambro' ..		7 12 6 @	8 0 0
ordinary ..		1 0 @	7 6	East India ..		5 10 0 @	9 0 0
SPIRITS OF TURPENTINE .. cwt.	1	14 0 @	1 15 6	African ..		5 0 0 @	7 0 0
SULPHATE OF QUININE .. oz.	11	9 @	12 0	White Hambro' ..		7 0 0 @	8 10 0
SQUILLS, dry .. lb.		0 1 @	0 2	English .. cwt.		2 0 0 @	9 15 0
undried ..		0 0 @	0 0	Cape ..		5 15 0 @	6 15 0
SPERMACEIN, English .. lb.		1 4 @	1 5	West India ..		0 0 @	7 0 0
American ..		0 0 @	0 0	WELD load		0 0 @	0 0
STARCH, English ..	2	6 0 @	2 12 0	WOAD ton		0 0 @	0 0
Irish ..		0 0 @	0 0	WOOD, Sapan Bimas		9 10 0 @	11 10 0
POTATO FARINA ..	14	6 @	15 6	Siam ..		8 0 0 @	10 0 0
TALLOW:							
Petersburg, new .. cwt.	1	18 3 @	1 18 6				
old ..		1 18 0 @	0 0				
Delivery last three months		1 18 0 @	0 0				
South American ..	1	15 0 @	1 17 6				
Odessa Sheep ..		0 0 @	0 0				
North American ..		0 0 @	0 0				
Australian ..	1	15 0 @	1 17 0				
Town Tallow .. cwt.	1	19 0 @	0 0				
Fat by ditto ..		2 1 @	0 0				
Russian Candle ..	2	0 0 @	0 0				
Melted Stuff ..	1	9 0 @	0 0				
Rough ditto ..	18	0 @	0 0				

IMPORTS OF DRUGS, &c., INTO LONDON DURING THE WEEK ENDING WEDNESDAY, OCT. 8.

For want of space we are obliged to omit the imports of this week; but we shall include them in our next.

TO THE EDITOR OF THE CHEMICAL RECORD.

SIR,—Having served several years on the council of the Pharmaceutical Society, I could, had I the ability, record some scenes worthy of the pen of Dickens. When it is

stated that every member of the council is nominated or feels that he is only in office by the sufferance of Mr. Bell, and that every paid officer of the society from the lecturers down to the porter is a protégé of that gentleman, it cannot excite wonder, that every feature and act of our institution bear the "bell metal" impress. No leader of the House of Commons ever had band of better trained or more devoted followers. Upon every measure submitted to the council they wait with respectful and silent solicitude to hear the cuckoo note of the worthy recipient of parliamentary honours, and then follow with earnest cackles in support that would not discredit their feathered prototype.

Every man of independent spirit who may accidentally become elected on the council of the Pharmaceutical Society, soon finds that he has mistaken his vocation in this council of jobbers and toadstealers. His aspirations for good and elevated purposes meet with no sympathizing response. Every question turns upon the interest of the paid and unpaid officials. He soon discovers that, though amongst them, he is not one of them, for there are confidences and cogitations with reference to the affairs of the society, in which he is not permitted to partake. He finds that the actual deliberations and determinations, respecting any course to be pursued, take place in a more congenial atmosphere than the council-chamber of the society, which chamber is merely devoted to the necessary farce of recording votes. Therefore, sir, I and many others await hopefully the advent of a fourth estate, in the shape of such a journal as yours, to redress our grievances.

Yours, &c., M. P. S.

[The following correspondence has taken place between Dr. Normandy and the editor of the "Medico-Chirurgical Review." We readily give place to it, feeling that Dr. Normandy has been unjustly dealt with.]

DR. NORMANDY TO THE EDITOR OF THE "BRITISH AND FOREIGN MEDICO-CHIRURGICAL REVIEW."

67, Judd-st., Brunswick-sq.

August 18, 1851.

Sir,—The last number of your review, containing a criticism of my work, "The Commercial Hand-Book of Chemical Analysis," which is, I think, more severe than it should be, seeing that many of the strictures are undeserved, as I trust I shall be able to prove in this letter, I beg that you will permit me to make a few remarks thereon, and courteously allow them to appear in the next number of your publication.

The strictures which I would respectfully represent as being undeserved are more especially the following:—

At page 79 of your Review for July last, it is stated that at page 581 of my book I have said, "If lead is present (in common water) sulphuretted hydrogen will produce a black precipitate, or only a brownish tinge, if only a trace be present." "Now," continues my critic, "we should be doing great injustice to both the water and the metal, if we were to conclude, with Mr. Normandy, 'that every discoloration produced by sulphuretted hydrogen was owing to the presence of lead; knowing that iron, copper, tin, and other metals, have the power of producing a very similar reaction.'"

Now, sir, to refer to the presence of lead, any discoloration which sulphuretted hydrogen may produce would indeed be an egregious blunder, but I really cannot imagine what words of mine may have induced the writer of the above lines to suspect, much less to assert, that I had committed it. And if it be a fact that I have not made such an absurd statement, I might be warranted, I think, in drawing a conclusion which certainly would reflect no credit on any critic's candour, impartiality, or discernment.

I did not say that if a black precipitate or brownish tinge is produced in testing common water with sulphuretted hydrogen, the operator should conclude that it is owing to the presence of lead; but indeed that if lead is present, a black or brownish tinge will be produced by the above reagent. Between the two expressions, "if lead is present a black precipitate is produced," and "if a black precipitate is produced lead is present," there is obviously a very great difference. When we say red is a bright colour, no body will

understand this to mean that every bright colour is red. The words of the sentence are not convertible terms, and to assimilate, in a same signification sentences having such different meanings, is to manifest an ignorance of the very first elements of logic, or rather a lamentable deficiency in even rudimentary common sense.

Indeed, far from ascribing that effect exclusively to the presence of lead, I added in the same paragraph that most metals can be detected in water by sulphuretted hydrogen. These are my words:—

"If lead is present, sulphuretted hydrogen will produce a black precipitate; or only a brownish tinge, if only a trace be present. Most metals can be detected in water by this reagent."

It may be as well, perhaps, to state *en passant*, that iron is not precipitated at all by sulphuretted hydrogen, except it be in the state of a persalt; and even then the effect produced by sulphuretted hydrogen is to render the solution *white*, which (admitting for argument sake, that a persalt of iron is present) is, I think, a colour universally admitted as being different from either black or brown, is the reaction determined by lead. My critic, therefore, in volunteering the information, that iron produces with sulphuretted hydrogen a reaction very similar to that of lead, has published a discovery which is altogether his own, but which possibly will not add much to his repute either as a competent reviewer or a particularly experienced chemist. There is, however, an omission in my book which bears on the point, and which may, with the necessary explanation, make this statement of my critic all right. It is this: common water, especially rain-water, often contains carbonate of ammonia, and if it be collected in towns from iron gutters for example, it generally happens that it is contaminated by a little iron. If such water be submitted to a stream of sulphuretted hydrogen, *hydrosulphuret of ammonia* is formed, which, reacting upon the iron, produces a blackish colour, which, however, has a different hue from that which is due to lead. This, however, though an omission on my part, does not in the slightest degree attenuate the injustice of the stricture I complain of, since that stricture does not refer to that omission, which, in fact, my critic did not notice; but to the statement made by me in reference to the discoloration produced by the presence of lead, which statement is strictly correct, and is not in any manner or degree coupled with a single word which may have authorized that gentlemen in saying that I attributed such discoloration, *exclusively* to the presence of that metal.

If now I turn to the next page of your Review I find the following words:—

"We might likewise occupy ourselves in exposing many of the errors which he (Mr. Normandy) has committed in assigning the values of proportional numbers in his accounts of quantitative analyses (as instances we refer to pages 51, 66, 43, 148, 416)". It is very questionable, however, whether the prosecution of such a task would be attended with any advantageous results to our readers."

I will at once concede that, in two of the five pages just quoted by my critic, the figures expressing the proportional numbers are incorrectly printed. But who that ever has had any thing to do with the press is not aware of the extreme difficulties and labour which the correction of proofs entails, especially where figures are concerned? Does not, therefore, the very fact of my critic picking up and pointing out a few errors, manifestly of a typographical nature,—*for they are given correctly in several other parts of the book*,—show a singularly ungracious spirit? And if, on the other hand, I can prove that out of these five pretended errors, three are no errors at all, and for the second time established that his statements are incorrect, not to say disingenuous, I think, sir, that I shall have said enough to enable the public to estimate his strictures at their just value.

Let us, therefore, refer to the pages animadverted against. To begin with page 51, the only proportional numbers given in my Hand-book at that page are in reference to sulphate of lead, 152 grains of which are said to represent 104 grains of lead, or each grain of which, I said, contains 0.68287 grains of lead.

If we take the equivalent number to be—

Of lead	104
That of oxygen	8
That of sulphuric acid	40

We have the eq. of sulphate of lead.. 152

And, therefore, 152 grains of sulphate of lead represent 104 of lead. This is precisely what I said; and it is correct.

Many chemists, however, instead of taking the equivalent of lead as 104, which in the present instance would give 0.68421 as the quantity of lead contained in 1 grain of sulphate, represent it as 103.66, Dumas; or 103.73, Berzelius; which would give 0.68329 and 0.68287 ($H_2 = 12.4796 O = 100$) as the amount of lead contained in 1 grain of sulphate. The latter number being that on which the Poggendorf's analytical tables have been calculated, is the number which I have retained, and will be found in Rose's masterly "Hand-book of Chemical Analysis," and in the translation of it which I edited in 1849. See vol. ii., page 817, to which I respectfully beg to refer your hypercritical friend. The difference between that last number and that given by the more recent and accurate analyses does not differ more than about the 0.00042 part of a grain, and therefore the value of the proportional number given by me may surely be considered as sufficiently correct for commercial purposes.

The next page pointed out is page 65, in which I perceive, in effect, that instead of 134, and again at page 416 instead of 145, we should read 144 as the equivalent of chloride of silver. These are certainly two errors which escaped me in correcting the proofs of my Hand-book, but that they are really nothing more than typographical errors is proved by the fact, that in various parts of my work, and particularly at page 622, twelve lines from the bottom, in the explanations given on chemical equivalents, the proportional number of chloride of silver may be seen correctly stated, namely 144.

Again, page 5 the equiv. of chloride of silver is given, 144	
do. 69	do. 144
do. 148	do. 144
do. 156	do. 144
do. 267	do. 144
do. 397	do. 144
do. 409	do. 144
do. 495	do. 144
do. 571	do. 144

These extracts, it is hoped, will be sufficient to justify my assertion.

We come now to page 43 of my book, in which an error of the same nature has been said to exist. That page treats of amber and ambergrease; and as the text does not contain one single figure there cannot, of course, be any fault in the reckoning or in the printing thereof.

I am, I assure you, sir, very reluctant to ascribe this mistake and the other inaccuracies of your contributor to sinister or unworthy motives; but I cannot refrain from observing that when a gentleman has taken upon himself to criticise a book, fairness and equity demand, the more especially if his duty unfortunately obliges him to find fault, that the condemnable parts should be clearly indicated, and with scrupulous correctness. In my humble opinion a typographical error, which is, for obvious reasons, perfectly excusable in a book, loses all right to a similar indulgence in a critical examination, but the misstatement or misrepresentation of a fact is a mischievous mystification, which, if involuntary, indicates a distorted judgment—if wilful, it is a literary misdemeanor.

In the present instance I would rather hope that my critic has only been guilty of the minor charge, and that the error alluded to and represented by him as existing at page 43, instead of being, as might perhaps be surmised, a wilful deception, or effect of a redundant and unhealthy imagination, is simply a typographical blunder which has escaped him in correcting his proofs (if he did correct them); which blunder, however (taking this more charitable view of the case) since he committed, permitted, or overlooked it, should and perhaps will henceforth induce him to look upon or denounce errors of that kind with a less jaundiced eye or with

somewhat less severity, and possibly may teach him to be less prompt to ascribe them at once to ignorance or "want of experience."

As to the last page, 148, mentioned by the writer as again containing an error in the figures, expressing the proportional numbers in the analysis of the crystals of carbonate of soda often adulterated with crystals of the sulphate of the same base, or with common salt,—that page contains two statements of proportional numbers; one of the statements is in the second, and the other is in the third paragraph as hereunder:—

In the second paragraph I stated that 117 grains of sulphate of baryta represent 162 grains of sulphate of soda; let us see:

The equivalent of baryta in whole numbers ..	77
Ditto of sulphuric acid	40

Therefore the equivalent of sulphate of baryta = 117

Where is the error?

The equivalent of soda in whole numbers..	32
Ditto of sulphuric acid	40
Ten equivalents of water contained in the crystals of sulphate of soda	90

Therefore the equivalent of crystallized sulphate of soda

Where is the error?

On the other hand, in the third paragraph of the same page, I stated that 144 grains of chloride of silver represent 60 grains of common salt; let us see:

The equivalent of chloride in whole numbers ..	36
Ditto of silver ditto	108

Therefore the equivalent of chloride of silver = 144

Where is the error?

The equivalent of soda in whole numbers..	24
Ditto of chloride ditto	36

Therefore the equivalent of common salt .. = 60

Where is the error?

Or is it that he, refining again upon the equivalents in whole numbers, wishes, as in the former case, to inveigh against errors which possibly may reach the two thousandth part of a grain; if so, I for one, am willing to give him the full benefit of it; and I only hope that in the course of his analytical labours (if he be an analyzer) he may never commit greater errors than such as may affect the 3rd place of decimals, which, if he do so, will entitle him not only to a distinguished, but indeed to the very first place in the analytical world; and compel all the chemists here and abroad, great and small, to hide their diminished heads, and bow in deference to the unprecedented and stupendous accuracy of the contributor to the *Medico-Chirurgical Review*.

At page 79 of your publication I read the following words:—

"In testing for iron, Mr. Normandy frequently directs the reader to add prussiate of potash to the suspected solution while it is in an acid state; but a very slight acquaintance with the art of analysis will inform us that such liquids almost invariably produce a blue precipitate with prussiate of potash, though they may not contain a particle of the suspected impurity."

It so happens, however, that in the whole course of my book, if I mistake not, prussiate of potash is proposed as a test for iron in an acid solution in only two instances, namely, at page 61 in the article on antimony, and at page 483 in the article on sal ammoniac.

Now, it is perfectly true that with concentrated acids, especially with the help of heat, the ferrous cyanide is speedily decomposed, and a precipitate of prussian blue is produced by that very decomposition of the test; it is even true that with the diluted acids this effect is also determined, though, in such a case, the reaction is much less distinct, and takes a much longer time before it becomes apparent.

But when the solution so tested is very dilute, every chemist knows that not the *slightest precipitate* is produced in the first instance, and that it is only after a long time that an inconsiderable blue sediment settles down.

Such is the case: the question is to know whether in the directions which I have given for testing with prussiate of potash, I have written that the solution should be either strongly or moderately acid, in which case the test would be inapplicable, and consequently the stricture justifiable; or whether, on the contrary, I have been recommended the acid solution to be highly diluted—in which case the test being applied in conformity with the principles of the analytical art, and with the practice of all competent chemists, the above stricture may not be denounced as false, ill-natured, or vexatious, the more especially if it be considered that the test is employed for a commercial purpose.

Any body who will take the trouble of referring to my book will easily verify the two instances in question. The words of page 51 are as follow:—

"The solution" (it is an acid one) "*is then diluted with a large quantity of water*, which will precipitate, &c. After which, the presence of iron may be detected therein by means of a solution of ferrocyanide of potassium, which will produce a blue precipitate, if iron be present."

At page 483 my words are:—

"If it were desired to identify the presence of iron and of lead, it may be done by dissolving a portion of the sal ammoniac in water, and dividing it into two portions, to one of which a *little* nitric acid is first added, and if, by pouring a drop or two of ferrocyanide of potassium, a blue precipitate is produced, it indicates the presence of iron."

By merely saying, however, that I had directed the reader to add the prussiate of potash to the suspected solution while it is in an acid state, omitting to mention or suppressing the observation that the said solution should be but very slightly acid, my critic has committed a *suppressio veri*, which in all the tribunals in Christendom is an offence assimilated to false testimony. Let us hope, however, for mercy's sake, that the behaviour may be attributed to a laxity in his notions of a critic's duty, so that he may thus stand absolved of the charge of dishonesty of purpose, leaving only that of incapacity as a critic, which I here beg to record against him, substat unattenuated and without excuse.

It would appear, in fact, that want of accuracy is the gentleman's forte (a serious defect this for a critic, and above all for a chemist). Even the titles of the books to which he refers he does not correctly give; the names of the authors which he quotes he does not correctly write. Garnier under his pen becomes Garniers, and Harel, Harels; Boustron-Charlard he spells Bourton and Charlards; and Kuhlmaan is transformed into Kohlmanr. On the other hand, Accum never published a work entitled "Death in the Pot," as stated by the reviewer in question, who probably never read, perhaps never saw, the book really produced by Accum, and the title of which is "On the Adulteration of Food." The name of "Death in the Pot" which it acquired was in consequence of those words being printed upon the exterior of it. It was sold in a kind of fancy binding, covered with spiders and their webs, and with the motto, "There is death in the pot." For my part, I think that, sir, a work on the adulterations of reviewers would be equally interesting, and perhaps not less useful; and possibly the present subject would not form one of the least curious chapters in it.

And now, sir, having thus far re-established, I think, the veracity of the statements made in my book, which veracity had been warped by your contributor's reviewing, and having demonstrated, I conceive, his utter unfitness for a critic's task, I might proceed to show that he is scarcely more competent as a chemist, for there is ample room, I will venture to say, for criticism in the way in which he has treated the questions which fill up the rest of his article; but I am weary of the work, and unwilling further to encroach on your time and space by lengthening this already very long letter. Besides, I harbour no vindictive feelings, and having acted in self-defence I would rather quit him now.

In conclusion, therefore, I would merely say that I have not the pretensions to say that my book is faultless, or that

it has as universal a range, or is always, and in every instance in as practical a form, as might be desirable; still if it be considered that in less than a year, the edition of 2000 copies has been nearly disposed of, I would fain hope that the researches which I have been making for several years past in collecting the materials thereof, the care with which I have selected and described the best and most approved methods of analysis, or those most readily practised, with a view to help those who may be but moderately conversant with chemical manipulation, and with a view also to suit, as well as I could, the wants of the merchant, the manufacturer, and the consumer, has not been altogether a vain labour.

I remain, Sir, your's most respectfully,

R. NORMANDY.

[The following note accompanied the preceding.]

TO THE EDITOR OF THE "MEDICO-CHIRURGICAL REVIEW."

Aug. 18, 1851.

SIR,—I beg to send you an answer to the critique which appeared on my work, "The Commercial Handbook of Chemical Analysis," in the last number of your publication; and I shall feel obliged if you will inform me whether you will publish it in extenso in your next number. I doubt not but that your feelings of justice will induce you to comply with my request, and that you will grant it as a *right*, though I am content to ask it as a favour.

I am, sir, yours most respectfully,

A. NORMANDY.

THE EDITOR OF THE "MEDICO-CHIRURGICAL REVIEW" TO DR. NORMANDY.

Princes-street, Soho, Aug. 20, 1851.

The editor of the "British and Foreign Medical Review" presents his compliments to Mr. Normandy, and begs to acknowledge the receipt of his letter of August 18, which came into his hands yesterday. As he considers that Mr. Normandy has made out a strong *prima facie* case against his reviewer, he has forwarded his letters to that gentleman for reply; and begs to assure Mr. Normandy that if he should find that any serious injustice has been done him he will not hesitate to make the *amende* in his next number.

At the same time he thinks it right to inform Mr. Normandy that the author of the review stands deservedly high as an acute and accurate chemist, and that the editor feels assured that the review was in no respect influenced by any preconceived feeling on his part. Of this he thinks that Mr. Normandy will be satisfied when he knows that the author of this review was also the writer of the notice of Mr. Normandy's former works in vol. iii., p. 203.

The editor would add that, as he is about leaving town for a fortnight, he will not be able to communicate again with Mr. Normandy until the beginning of next month.

DR. NORMANDY TO THE EDITOR.

67, Judd-street, Brunswick-square,

Sept. 6, 1851.

SIR,—In your letter of August 20 you politely promised to communicate again with me at the beginning of the present month in reference to the critic of the "Commercial Handbook" which appeared in the last number of your "Review." There is evidently no time lost yet on your part; but I shall be glad to hear from you on the subject as soon as you can conveniently do so.

I have read the notice of my former works to which you alluded in your letter, and I am at a loss to reconcile the indulgent and kind manner of the writer in that former notice with the disparaging or depreciating and unmerited tone of the criticism of which I complain.

I remain, &c.

A. NORMANDY.

THE EDITOR OF THE "MEDICO-CHIRURGICAL REVIEW" TO DR. NORMANDY.

Princes-street, Soho, Sept. 10, 1851.

SIR,—My absence from home has been more prolonged than I expected when I last wrote to you. I now take the earliest opportunity of replying to your letter.

In the first place I would beg to repeat my assurance that

I have an entire conviction that your critic was actuated by no unfriendly feeling towards you. Of this you must, I think, have *a priori* evidence in his notices of your former productions; and I have his assurance that nothing had occurred in the interim to change that feeling. But it is natural that a work on analytical chemistry should be subjected to a rigid scrutiny; for there is scarcely another subject on which the most scrupulous accuracy, especially as to figures, may be so fairly expected. You may say, perhaps, that still greater accuracy may be expected in a critic. This I freely grant; but the exigencies of periodical literature must also be considered; and that which deserves condemnation in a work whose author is not tied to time in its production, may be venial in a review which must appear on a given day. Now, it so happens that all the charges of inaccuracy which you have brought against the reviewer do not apply to him, because they are printer's errors; and he had not the opportunity of correcting the proof. Of course the fault is mine for allowing such to go forth; but it does not disprove charges of inaccuracy against you, that page 43 should have been 113, and that certain names have been misspelled by us. This *tu quoque* kind of argument proves nothing whatever in the present case.

With reference to the specific statements you adduce, I shall take them in your own order.

On the first the reviewer remarks, "As Mr. N.'s book was written for the sole purpose of pointing out the modes of detecting adulterations, I maintain that I put a right construction on his remarks respecting the discovery of lead in common water by means of sulphuretted hydrogen." It certainly appears to me that such is a legitimate criticism upon the sentence quoted, when it is considered as a part of the series of directions given for testing for impurities in water. But as your own words are cited, the reader can judge for himself.

Secondly, with regard to the errors in proportional numbers:—

In page 51, the fraction 0.68287 should be, according to your own *proportionals*, 0.6842. What is the meaning of the conjunction *or*, if the second half of the sentence is not the counterpart of the first? If lead is 104, and sulphate of lead 162, then each grain of sulphate of lead contains more than 0.68287 of lead. This inaccuracy in itself is trifling; but surely it must lead to distrust to find a different series of proportionals adopted, without any intimation, in two consecutive lines.

The next error (page 65) is admitted by you.

As I have already mentioned, page 43 should have been 113; and there you will find that 50 grains of alumina are stated to represent 332 of alum, instead of 474—a very serious difference.

In 148 the error is in saying that the waters of crystallization in the soda of commerce is 62.69 per cent.; it should be 62.5 per cent. I am not sure, however, but that this may be dependent upon a difference in the proportionals you have assumed. You seem (by your letter) to have taken *whole numbers*, and neglected decimals.

In page 416, you have again taken 145 as the equivalent of chloride of silver, and made erroneous calculations thereon.

Thus all the reviewer's statements on this head are substantiated; and our misprinted number is the one in which there is the gravest error on your part.

Thirdly, the reviewer says, "Mr. N. admits that the addition of prussiate of potass to an acid solution will lead to the fallacy mentioned; and consequently that part of his charge requires no answer. I have destroyed my notes, and cannot, therefore, refer to the pages of his book in which the directions are given; but I feel satisfied that he has frequently committed the error complained of."

Fourthly, with respect to the misprints of names, as I have already said, the reviewer is not answerable for them; and they do not in the least alter the case against you. The reviewer remarks: "It is singular that Mr. N. has himself misspelt the name of *Bouton* (page viii.), and that he always writes Kuhlmann with one n instead of two."

Fifth, As you have thought to serve your cause by adding another *tu quoque*, I may inform you that Accum's

treatise, having on the top of each cover a sketch of a skull and cross-bones, with the motto, "There is death in the pot," has always been known under that name. This I can myself speak of, from having been in the way of hearing it frequently mentioned, some twenty years since.

I have taken a good deal of trouble to go into this case, and being quite satisfied that the reviewer had no animus against you, and that his charges are substantially correct, although exception may possibly be taken to some of his statements, I must beg to decline any further correspondence on the subject; especially as you have shown yourself so ready to impute unjust motives where I am certain that none existed.—I am, Sir, your obedient servant,

THE EDITOR.

TO THE EDITOR OF THE "BRITISH AND FOREIGN MEDICO-CHIRURGICAL REVIEW."

67, Judd-street, Brunswick-square.

Sept. 10th, 1851.

Sir,—I beg to acknowledge the receipt of your letter of this day's date, which, in my humble judgment, far from establishing that my critic is substantially correct, proves on the contrary quite the reverse.

As however you seem to entertain in some measure a different opinion, may I respectfully request, as a finale to my unwelcome correspondence, to be informed whether you will allow my answer to appear in your next number, that the public may decide between my reviewer and me? If I am satisfied to stand the consequences of that ordeal, notwithstanding the explanations which the reviewer may endeavour to give, there cannot be any reason why my request should not be complied with, and I shall consider it a favour.

Should you, however, in the interval which has as yet to elapse before your next number appears, come to the conclusion that I might have been treated by my critic with less severity and with more courtesy, and feel warranted in modifying the unmerited strictures for most of them (not excepting that alluded to by you in page 113) bear upon mere typographical errors, and the rest cannot be substantiated with any candour, I shall willingly allow the matter to rest, for I am of opinion that anything calculated to disturb the good feeling which should exist between men engaged in the same pursuits, even though unknown to each other, is always a regrettable occurrence.

In the hope that a few words in answer to this note will not be construed by you as a breach of your determination to decline further correspondence with me on the subject, I remain with thanks for your courtesy,

Yours most respectfully,

A. NORMANDY.

[To this letter no answer was returned.]

TO CORRESPONDENTS.

. Gentlemen who send manuscript to the CHEMICAL RECORD under arrangement for payment are informed that original matter alone will be allowed to count; no abstracts, translations, or adaptations being receivable under the terms proposed. The propriety of this will be obvious.

"Cambridge, Oct. 2, 1851.—SIR.—Would you oblige me by publishing in your next RECORD a recipe for 'good roudaletia,' and one for English annatto?—In haste, yours very truly, CHEMIST.—Wish you every success."—The following is a recipe for English annatto:—Take of egg or flag annatto 24 lbs.; gum tragacanth 10 lbs.; starch 6 lbs.; soap 14 lb.; red bile, or Venetian red, 1 lb.; water, q. s. Let the whole be mixed in a copper pan, and formed into rolls. English annatto is partially soluble in alcohol, by which test it may be distinguished from the foreign article.

"SIR.—I shall esteem it a great favour if you will answer me the following in your CHEMICAL RECORD.—I wish to know the most economical place to purchase a portable furnace for melting and distilling. Also please inform me of an institution or a person that teaches chemistry on moderate terms. I should be glad also to know where I could buy small work on distilling by retort.—I remain your humble servant, GABRIEL."—Messrs. HORSB, Thornthwaite, and Wood, Newgate-street. See the advertisement sheet of last number's RECORD.

N.B.—In consequence of great press of matter, we are obliged to allow many correspondents to remain unanswered until next week.

Post-office orders, or orders on a London house, should be drawn in favor of the Publisher, Mr. RICHARD BADOGLIFFE FOND, 17, Upper Wellington-street, Strand.

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especially worthy their notice, being a most efficient and convenient Medicine for those ailments usually treated with Copaiba and Cubebs; they are unobjectionable to the most susceptible stomachs, and pleasant to take, so that the doses may be repeated without intermission—a desideratum: they are the only Capsule that will bear the temperature of a tropical climate.

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TESTIMONIALS.

From JOSEPH HENRY GREEN, F.R.S., President of the Royal College of Surgeons, London; Senior Surgeon to St. Thomas's Hospital; and Professor of Surgery in King's College, London.

I have made trial of Mr. Franks's Solution of Copaiba, at St. Thomas's Hospital, in a variety of cases of discharges in the male and female, and the results warrant my stating, that it is an efficacious remedy, and one which does not produce the usual unpleasant effects of Copaiba.

(Signed) JOSEPH HENRY GREEN.

Lincoln's-inn-fields, 15th April, 1835.

From BRANSBY COOPER, Esq., F.R.S., one of the Council of the Royal College of Surgeons, London; Surgeon to Guy's Hospital, and Lecturer on Anatomy, &c.

Mr. Bransby Cooper presents his compliments to Mr. George Franks, and has great pleasure in bearing testimony to the efficacy of his Solution of Copaiba in Gonorrhoea, for which disease Mr. Cooper has prescribed the solution in ten or twelve cases with perfect success.

New-street, April 13th, 1835.

From H. A. CÆSAR, M.D., Surgeon, Professor of Anatomy in the Cork School of Medicine and Surgery; late President of the Hunterian Society of Edinburgh, &c. &c.

I have frequently prescribed Franks's Specific Solution, and deem it a valuable remedy in cases where Balsam of Copaiba may be prescribed with propriety, and have no hesitation in stating it is superior to any other preparation of the Balsam. (Signed) H. A. CÆSAR, M.D.

South Mall, Cork, Nov. 9th, 1841.

The above may be had of all Wholesale and of most respectable Retail Dealers in Medicine.

Mr. FRANKS may be consulted daily until two o'clock.

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THE GUTTA PERCHA COMPANY beg to state that they are prepared to supply every variety of Vessels for Acids to order; such as

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The following letters afford evidence of the value of GUTTA PERCHA for Acid Vessels:—

From Messrs. BROWNE and WINGROVE,

GOLD-REFINERS, LONDON,

30, Wood-street, Cheapside, London,
24th January, 1850.

SIR,

(Copy.)

Having had in use for the last three months vessels lined with Gutta Percha for the reception of dilute Nitric Acid, we beg to state that in every respect the Gutta Percha is as good and as firm even as the first day it was used, and so highly satisfied are we of its valuable properties in resisting the action of this description of acid, that it is our intention to adopt it generally for every description of article or vessel to which we can apply it in our process of refining. Before we had fully made up our minds for introducing Gutta Percha into our Works, we submitted it to the severe test of a twelvemonth's trial in strong nitric acid, when the surface of the Gutta Percha was injured, while the interior was sound.

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We remain, Sir,

Yours obediently,

BROWNE and WINGROVE.

To Mr. Statham,
Gutta Percha Company.

Anxious to ascertain the DURABILITY of Gutta Percha as a lining for Acid Tanks, a second application was made to Messrs. Browne and Wingrove (after the Tanks had been in use about fifteen months), and the following reply was received:—

(Copy.)

GENTLEMEN,

30, Wood-street, Cheapside,
27th November, 1850.

In answer to your inquiry with regard to our experience in the use of Gutta Percha, and whether it meets with our expectations, we have to return our most unqualified approval, both as to its capabilities and adaptation to our uses. We are highly satisfied with the article, and find it much the cheapest and safest we have hitherto employed. With regard to the specific gravity of the Acid to which the Gutta Percha is exposed we have never tried it, but the liquid contains near upon one-fifth of Acid at a temperature of 90 or 100 degrees.

We remain, Gentlemen,

Yours obediently,

BROWNE and WINGROVE.

From Messrs. E. and J. STURGE,

CHEMICAL WORKS, BIRMINGHAM.

Birmingham, November 25th, 1850.

(Copy.)

In reply to your inquiry we are glad to record our continued satisfaction in the use of Gutta Percha for Tubing, Carboys, and other vessels; after more than twelve months' constant use, we are unable to trace the slightest action of Muriatic Acid upon them.

As far as our experience has yet gone, the material is equally proof against the corrosion of strong Alkalies, and also Sulphuric Acid, except at a high density.

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VOL. I.

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Wharf, Sawing, Planing, and Moulding Mills,
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Prout has characterized the discovery of it as apparently unfolding the germs of immense benefit to mankind, certainly of importance equalled only in the annals of medicine by those of the illustrious Harvey and Jenner.

To the intelligent but uninitiated in the art and mystery of medicine it is merely necessary to recal the fact that at one period all parts of the body were in a fluid state, and daily and momentarily since have derived their nourishment and support from the vital current—the necessity of keeping that fluid supplied with the stimulus which is the true cause of its action is most important, and must be apparent to all.

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Gutta Percha Carboys. The Gutta Percha Company
have been favoured with the following letter from

MESSRS. JAMES MUSPRATT AND SONS, OF LIVERPOOL.

(Copy.)

Liverpool, 8th September, 1850.

Gentlemen,—In reply to your favour of yesterday, we give it as our opinion that cool Muriatic Acid has no effect on the Gutta Percha. We have now had it in use for nearly a year, and we have no doubt, that in a short time, nothing but Gutta Percha will be used for conveying Muriatic Acid. For, although rather expensive at first, it soon pays for breakage and baskets of glass carboys.—Yours truly,

JAMES MUSPRATT and SONS.

Every information may be had from the **GUTTA PERCHA COMPANY, Patentees, 18, WHARF ROAD, CITY ROAD, LONDON.**

TO GENTLEMEN WITH TENDER FEET.

J. Chappell, 388, Strand, corner of Southampton-street, BOOTMAKER and PROFESSOR OF FITTING, invites the attention of such to his **METHOD OF MEASURING**, by which he guarantees to produce a Fit unprecedented for comfort, and combined with the most fashionable shape. Those Gentlemen upon whom Bootmakers have practised unsuccessfully are particularly solicited by J. C., who will undertake to fit them at once, however difficult. Established 1825.

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THE LIFE ASSURANCE CHRONICLE:

A MONTHLY RECORD OF, AND GUIDE TO, ASSURANCES, ANNUITIES, AND
GENERAL FINANCE.

Deeply impressed with the immense benefits derivable by society at large, and by our highly-civilized community in particular, from an organized extension of the great system of Life Assurance, and convinced that the beneficial effects alluded to can never be properly felt till a more extended knowledge of the great principles of Assurance is disseminated, and till an accurate, a faithful, and an impartial record of the progress made and daily making exists, the conductors of the **LIFE ASSURANCE CHRONICLE** have determined on establishing, under the above title, a Monthly Magazine devoted to the interests and to the advancement of Life Assurance.

Having gathered round them a staff of gentlemen long and intimately conversant with the subject, and many of whom are now actively connected therewith, the conductors have no fear of failing in the task they have proposed to themselves. Aided, moreover, by the possession of peculiar and rarely accessible sources of information, by elaborate statistical data prepared by skilful actuaries, and by a widely-extended correspondence, they feel confident in being able to place before the public a record of the present state, the past and future prospects, of Life Assurance detailed yet succinct, unbiassed and impartial in an eminent degree.

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MR. RICHARD RADCLIFFE POND.

ORIGINAL SERIES.

REPORTS OF LECTURES ON MATERIA MEDICA.
By JONATHAN PEREIRA, M.D., F.R.S., &c.*

(Continued from page 214.)

Gentlemen,—In my last lecture I intimated my intention of discussing, under the head of *materia medica*, the substances derived from the animal and vegetable kingdom, leaving the mineral products used in medicine to be dealt with by your lecturer on chemistry. I also told you that the demarcating line between the three kingdoms was by no means evident, and hence it arises that no unexceptionable definition of the three terms animal, mineral, and vegetable, had yet been offered by any naturalist. You are probably all aware of the short distinction drawn by Linnaeus between the three kingdoms, a distinction which hardly, however, can be called a definition, nor is it so true as it seems. The distinction in question is embodied in the Latin axiom, *sæpe crescent*;—*vegetabilia crescent et vivunt*;—*animalia, crescent vivunt et sentiunt*.

The most characteristic distinctions of an animal are the presence of nervous fibre and an alimentary canal; no being not possessing these can, according to received definitions, be an animal. Extending the number of animal characteristics, we may enumerate the presence of muscular fibre, and a large amount of nitrogenous principles generally.

Thus, as between animals and vegetables, we have only individualised the latter by negative characteristics; what is not a mineral nor an animal must necessarily be a vegetable. Still, however, there are not wanting certain positive characteristics of vegetable, and perhaps the most distinctive of any is the presence of starch globules. In illustration of this, I may mention that there exists an organised natural being—concerning which there has been doubt expressed as regards its animal or vegetable nature. Investigation, however, proves it to contain certain starch grains, which settles the question, and stamps it as a vegetable.

Whatever natural historical system of division for animals and vegetables we choose to follow, it is competent to take it in either the ascending or descending scale. That is to say, supposing the lecturer to take up animals, he may commence with man, as being at the top of the creative scale, or he might begin at the very lowest. I shall follow the former plan, and, beginning with man, shall descend until arriving at sponge—the lowest pharmaceutical member of the animal kingdom—we enter upon the vegetable domain. This I shall treat of in the ascending direction, until I arrive at the highest pharmaceutical member of the class.

There have been numerous divisions proposed of animals at different times, of which the method of division adopted by the illustrious Cuvier is undoubtedly the best; and, having been now slightly modified by Professor Owen, it leaves but little to be desired.

According to this scheme, the animal kingdom is divided into the four great classes of Vertebrata, Mollusca, Articulata, and Radiata. The three first are very well marked classes indeed; but the latter is made up of creatures of such heterogeneous characteristics, that it has been further subdivided by Mr. Owen and others.†

The real cognisable distinction between all these great classes is the arrangement of the brain and nervous system, although the names are not indicative of this fact. In the

vertebrata the brain is enclosed in a bony cavity; and the spinal marrow, which is only a bundle of nervous filaments, is enclosed in a bony sheath for protection. Now this bony sheath is capable of a turning motion; hence, from the word *vertebre*, to turn, is derived the distinctive appellation of *vertebrata*; an appellation, you will observe, that does not directly indicate any peculiarity of nervous arrangement, although such peculiarity is implied.

The term *mollusca* is derived from *mollis*, soft, and is applied to creatures with soft tissues, like, for instance, the cuttle fish and the oyster. Again, there is no direct reference to the nervous system, which in this class assumes a definite and not less well marked arrangement than in the first great class of *vertebrata*. Such animals may be said to have many little brains, or ganglions, as anatomists call them, distributed over various parts of the body.

The name of the third class, *articulata*, is derived from the Latin word *articulus*, a joint, and comprehends such creatures as the crab, lobster, &c., besides others which I shall hereafter have to describe. In this class the nervous system is arranged in two long threads, or bands, extending the whole length of the body, and giving off various ramifications.

The fourth great class, namely, *radiata*, is so called from the various parts of the animal which compose it radiating from a common centre. It is made up of heterogeneous materials, as I have already mentioned, and hence the necessity which has been felt for subdividing it. These subdivisions, however, I need not consider at this time. Now the class of *vertebrata* admits of a division which may well be represented by this table [the lecturer pointed to a table which we append]:—

Vertebrata.	
1. { Viviparous Mammiferous Air-breathers Warm-blooded	1. Mammalia.
2. { Oviparous Air-breathers	a { Warm-blooded (2) Aves. Cold-blooded (3) Reptilia. b Water-breathers (4) Pisces.

You see then, gentlemen, according to the descending scale, I shall first of all have to treat of mammalia. You all know the peculiarities of this great order; animals belonging to it are born alive, and are suckled by milk secreted in the *mammae*, hence the term mammalia. Other peculiarities there are, but I need not mention them here. As for the distinctive physiological peculiarities of aves, reptilia, and pisces, it would be out of place to go into these matters very extensively here. I may mention, however, that the breathing system of birds is adapted to effect the maximum of oxygenation with the minimum of weight; the bones of birds, too, are peculiar, being adapted for strength and lightness. Their egg-bearing characteristics I need not expatiate upon; but, passing on to the next order, reptilia, I will merely say that they stand intermediately in the arrangement of their breathing and their circulatory system between birds and fishes. As regards the last, namely, fishes, their great peculiarity consists in the fact of their lungs, or gills, as they are called, being specially adapted to absorb the oxygen dissolved in natural waters. Fish, gentlemen, are termed water-breathers, but I need hardly say this term is so far incorrect, that they merely breathe the oxygen dissolved in water.

Having hurried over these leading characteristics, I now return to mammalia, for the purpose of telling you it comprehends nine orders, namely:—

1. Bimana.
2. Quadramana.

* Delivered at the Pharmaceutical Society.

† An article will probably soon appear in this journal from the Professor's own pen.

3. Carnivora.
4. Marsupialia.
5. Rodentia.
6. Edentata.
7. Ruminantia.
8. Pachydermata.
9. Cetacea.

As I shall have to slightly indicate the leading characteristics of these orders, it may be as well to get rid of the *cetacea* at once, by telling you their peculiarity consists in having four limbs like other mammalia, but the hinder limbs are rudimentary, not projecting beyond the skin. Returning, now, to the head of the list, for the purpose of discussing the order *bimana*, I need not tell you the name means *two-handed*, and that the only representative of the order is *homo*, man.

In the present day it may be said that no article of the *materia medica* is obtained from man, although this was not always the case. The gastric juice and saliva of man have been employed in the way of friction, and human bile, too, has been numbered amongst the articles of the *materia medica*; not to forget the bituminous human remains termed mummies. It would be improper not to mention under this head the blood of man, used for the purposes of transfusion, although a mere notice will suffice.

The order *quadrupedia* comprehends the monkeys; and these again do not yield any contribution to our *materia medica*; also formerly both the fat and the heart of these animals were used.

The *carnivora*, or flesh-eating animals, next to be treated of, cannot be said to contribute very abundantly to the appliances of the healing art. As for dogs, their excrement, under the name of *album græcum*, and which chiefly consists of phosphate of lime, was formerly much in repute as a remedial agent. One favourite mode of using it consisted in blowing it into the mouth and throat. I have no specimen of this substance to show you, gentlemen, nor is it necessary. Although disused now, I well remember seeing, amongst the stock of an old apothecary, a drawer full of this not very delicate medicine.

The feline, or cat tribe, I need hardly say, also comes under the head of *carnivora*, and here we begin to find something in the civet cat more nearly allied to the study of *materia medica* than has hitherto come under our notice.

The civet cat perfume, formerly employed in medicine, but at this time confined to the uses of perfumery, is obtained from the anal sac of the animal, of which I exhibit a drawing.

The carnivorous animals we have already discussed belong to the second, or digitigrade subdivision; comprehending such animals as walk upon their toes, not on the soles of their feet. Now the bear belongs to the plantigrade order, walking, as I dare say you have seen, on the soles of his feet, and not on his toes.

The bear belongs to the animals of our *materia medica*, by courtesy, at least, from the fact of his supplying, or rather pretending to supply, us with grease. The idea of using bears' grease was doubtless first suggested by what has been called the doctrine of signatures. The bear has strong hair, and hence it was assumed that the inunction of his fat should produce something of the same kind. The greater amount of bears' grease now-a-days is made from hogs' lard; nevertheless, here is a specimen of real bears' grease; it is very liquid, as you observe, from the predominance of elaine or oleine. I have, however, seen it far more solid.

The marsupial animals yield nothing to the *materia medica*,

and therefore we may pass them over without further notice. You all know their peculiarity consists in bringing forth their young in an immature state; they are nursed in a pouch until they acquire the necessary strength to live without this indulgence. The marsupial animals, gentlemen, are considered to be a connecting link between birds and quadrupeds.

The class of *rodentia* will require much more extended notice than we have yet given to the rest, from the fact of its containing the beaver, or castor animal. The term *rodentia* is derived from the Latin infinitive, *rodere*, to gnaw; the propriety of which term you will easily recognise by examining the chisel-like teeth of the rabbit, rat, or beaver. The beaver is an animal very celebrated, not only for its castor pods, but its fur, as you well know; it is found in Europe, Asia, and America, and its habitat is limited in both the Old and New World by the parallels of 68 or 69, and 33—north latitude. The tail of the beaver is very curious—here is a specimen. Notwithstanding its great size, the beaver's tail is composed chiefly of muscular tissue, and is a most useful member, serving not only for the purposes of oar and rudder to direct the animal's course in the water—but also for a trowel in the construction of those wonderful mud edifices which the animal delights to build.

The tail of the beaver, you will observe, is not unlike a fish in external appearance; hence the Roman Catholics, I am informed, may eat it on fast days.*

The castor of commerce is the resinous looking matter of the male and female beaver's pouch, and is brought into commerce under the denomination of Russian and American. Of the Russian we have three varieties, namely, Siberian, Bucharian, and False. There is also a European castor, derived from the beavers of Sweden and Norway; but, as this article is unknown in commerce, I need say no more about it. The only valuable portion of the castor sac is its contents, and referring to this table [the lecturer pointed to the following]:—

<i>Brande's Analysis of Castor</i>	1 0
Volatile oil	13.85
Resin	0.33
Castorin	0.05
Albumen	0.20
Osmazome	33.62
Carbonate of lime	2.82
Other salts	2.30
Mucus	
Animal matter like horn	2.30
Membrane	20.00
Moisture and loss	22.83
Canadian castor	99.30
Volatile oil	2.0
Resin	58.6
Cholesterine	1.2
Castorin	2.5
Albumen	1.8
Gelatine	10.4
Osmazome	2.4
Matter soluble in alcohol	1.6
Carbonate of lime	2.6
Other salts	2.4
Membrane	3.0
Moisture and loss	11.7
Russian castor	100.0

* We quote this as having been said. Its bad taste is unmistakable, and is the more extraordinary coming from a gentleman who is connected with the much persecuted Jewish community.

you will find a substance termed castorin to be a constituent. You are not, however, to understand that this castorin is the active principle of castor, as we shall presently see.

With regard to the physical characteristics of castor, the secretion should appear red, as you will observe by viewing this specimen which I lay before you. Nevertheless, mere physical appearance is delusive. In the year 1835 some exceedingly fine castor, as it was thought, found its way into commerce. Two pods sold for £2. 8s. 9d., and, being subjected to chemical examination, were found worthless. Amongst other impurities it contained large quantities of chalk, as may be demonstrated by its effervescence with muriatic acid. M. Guibourt, of Paris, again had some introduced to his notice as very good. He paid for it at the rate of £3. 4s. per oz., and found it, on examination, to be perfectly worthless. And, now gentlemen, as to the purchase of castor, I must tell you that the only good Russian castor is the Bucharian; it is called Russian simply because we obtain it through that country. The best castor in English commerce is the American.

I have already told you, gentlemen, that the active principle of castor does not reside in castorine; it resides in a resin and volatile oil; the chemical constituents of which we shall discuss presently.

Here is some water which I distilled from castor in the year 1833. The volatile oil has disappeared, as you will observe, and the peculiar odour of castor is gone. The only smell at this time recognisable is that of the meadow sweet, or *spirea ulmaria*. Now, Wöhler found carbolic acid (commonly called hydrate of phenyle) and Pelouze, phenic acid, in castor—a substance also obtained from coal tar. My distilled product of castor can be proved to contain carbolic acid by the addition of ammonia, which produces a yellow—and chromic acid, a purple colour.

The organic principles of which I have spoken belong to the salicylic series; and there is great reason to believe that carbolic acid will hereafter be discovered to be the active principle of castor. [The clock now struck, and the lecturer postponed the further consideration of castor until the next lecture.]

Gentlemen,—In my last lecture I showed you that salicylic acid was developed in water distilled from castor, and I was going to prove that it resulted from the decomposition of carbolic acid. I mentioned also that the distilled product in question possessed an odour of the meadow sweet or *Spirea ulmaria*. Now, if I add sulphuric acid and bichromate of potash to salicine—oil of *spirea ulmaria* results—thus proving the intimate relation existing between the two. Physiological facts there are also in proof of the readiness with which one member of the salicylic series changes into another. Thus, if salicine be administered by the stomach, salicylic acid appears in the urine. Again, the chrysomella populi contains salicylic acid, as I am recently informed by Liebig may be proved, by making the creature crawl over paper moistened in a solution of peroxide of iron, when, wherever it crawls, a stain is left.

Now, gentlemen, the connection of castor, or at least its active principle, with the salicine series is very curious and most interesting; the beaver's food is the bark of willows or other plants of cognate tribe; and, reasoning from the basis of known physiological facts, we are warranted, I think, in attributing the activity of castor to the food which the beaver has lived upon. Castor, I have told you, differs exceedingly as to its efficacy. Now this difference may be found to be de-

pendent on the absence of the food necessary to yield carbolic acid. And I must not conclude the subject of castor without pointing out the intimate relation which exists between creasote, carbolic acid, castoreum, salicine, the active principle of the tonquin bean, and of winter green. Most probably creasote will hereafter be found no other than impure carbolic acid, and what is called solid creasote to be pure carbolic acid.

Now the active principle of castoreum resides in the resinous portion, and will always be in direct proportion to the amount of the latter. Hence it is that the commercial value of castor may be known, by observing the quantity of resinous matter any specimen contains. Referring to the table [see last lecture] of the composition of various specimens of castor, you will observe that the Russian contains more than the Canadian. Now at this time the reverse is the case, if we regard the Russian produce on a whole; and I am led to infer that the author of that table operated exclusively upon Bucharian castoreum.

A specimen of Canadian castoreum which I analysed yielded, out of 800 grains (the prime weight), 480 grains of resin, a quantity which you will find, on calculation, to amount to 60 per cent.

A very good method exists, however, of determining approximately, the amount of resin in castoreum, without having recourse to analysis. The way I will show you. Before me I have two specimens of tincture of castor, one made from the Russian Siberian, the other from the Canadian variety. I add water to both, and you will observe the great difference in the amount of precipitate thrown down. This precipitate is the resinous matter, as may be proved by the addition of ammonia, which has the property of redissolving it. Observe how much more ammonia is necessary in the case of the Canadian castor than in the other.

I referred, gentlemen, in my last lecture to castorine, and told you it had no active property. In point of fact, it is a sort of non-saporifiable fatty matter, and belongs to the list of substances which the Germans term *camphors*. When treated with nitric acid, it yields, like other bodies of this tribe, a derivative acid, the name of which I cannot tell you. Besides castorine, the castoreum is found to contain many adventitious substances, such as carbonate of lime, and cellular tissue, which may be regarded as either mixed for the purpose of adulteration, or secreted by the membrane of the sac.

And now, before concluding this part of my lecture, I must tell you that castor is a medicine very little used in England; as to the largest dose, I believe two ounces of the tincture may be given without evil consequences.

The next order of animals I take up is that of the *edentata*, or toothless animals, of which I may give you, as an example, the sloth. These animals yield nothing to medicine, so we pass on to the

Pachydermata, or thick-skinned animals, the leading peculiarities of which are the structure of the foot, and the possession of only one stomach. To this order belong the hippopotamus, the elephant, and many others. Yes the horse is a pachyderm, but I don't think a jockey would be vastly gratified were he informed that his animal was a thick-skinned beast.

The hippopotamus is so far a contributor to the *materia medica*, that of his teeth the dentists manufacture some of theirs. The tooth of the hippopotamus is harder than that of the walrus, but more liable to change colour.

Of the elephant there are two kinds, the African and the Asiatic. These animals, gentlemen, have no canine teeth,

but their two incisors take the form of tuaks. The elephant contributes to our *materia medica* by yielding ivory shavings, from which may be obtained gelatine. This gelatine when in solution yields a precipitate with tincture and infusion of gall, but none with alum.

The gelatine of ivory belongs to the *collin* division of this table.—

1. Collin—bone, skin, isinglass, glue, size, tendons.
2. Chondrin—cartilage.
3. Gelatine of elastic tissues—elastic tissues.
4. Pyrogelatin—gelatine altered by heat.

But there is great reason to doubt whether gelatine in all its forms be not a product rather than an educt.

When ivory-black is long calcined, the access of air being permitted, there at length results a white substance, being a mixture of carbonate and phosphate of lime. This was formerly used in medicine, under the name of *spodium album*.

Passing on to another genus of the order pachydermata, let us now take up the pig. Hogs' lard we all know is a pretty frequently used substance of the *materia medica*. It is a substance made up of adipose tissue, containing two or more fatty bodies, of which one belongs to the liquid, *elaine* or *oleine* type, and the other to the *stearine* or *margarine* series; the lard is obtained by exposing the cellular tissue to heat and straining. Occasionally salt is added, but this is a great disadvantage for most pharmaceutical purposes.

On the average we may say that hogs' lard contains about 38 parts of *margarine* and *stearine*, and 62 parts of *elaine* or *oleine*, but these relative quantities are not invariable.

A large quantity of hogs' lard is now imported from the United States, where the pigs yielding it are slaughtered in immense numbers. The method of killing them consists sometimes in knocking them on the head; occasionally, however, their heads are arranged in a row, and cut off by one stroke of a gigantic guillotine.

Various circumstances exist to render American lard more liquid than our own. In the first place, the animals yielding it are fed almost exclusively with maize and acorns, which conduce to the development of the *oleine*; in the second place, the mode of lard manufacture not only yields the fat of the adipose tissue, but also the more liquid marrow of the bones. The plan is this: the pigs are thrown, after the removal of their hams, into enormous cauldrons of boiling water, and are thus converted into a sort of a hash, on the surface of which the liberated oil floats, and from which it is removed by skimming. A great quantity of lard arrives here from America without any preparation, but a much larger quantity is exposed to a process which extracts its liquid from its solid part. The former is now largely imported, under the name of hog oil, and is not only employed both here and in France for adulterating castor oil and the oil of olives, but Brother Jonathan has discovered these secrets himself.

You are all aware that lard, on keeping, becomes what is called *rancid*. This rancidity depends on the formation of an acid, as I may prove by melting some rancid lard in hot water, and testing the water with litmus paper [the lecturer performed the experiment]. An analysis of rancid lard has been made by Chevreul, and I here show you his table:—

PROXIMATE ANALYSIS OF RANCID LARD (CHEVREUL).

- Stearine and *oleine*.
- Volatile non-acid matter, having a rancid odour.
- Caproic (?) acid.
- Another volatile acid.
- Oleic, *margaric*, and perhaps *stearic* acids.
- Yellow colouring matter.

Non-acid, non-volatile matter, soluble in water.

Lard is a nutritive substance, inasmuch as it yields the materials for fat; but, neither containing sulphur nor nitrogen, it cannot assist in the formation of muscle.

Gentlemen, we very cursorily passed over the horse. He yields nothing directly to the *materia medica*, it is true, but, indirectly, we are indebted to him; for instance, the knackers supply us with Dipper's animal oil, and his hoofs are employed in the manufacture of prussiate of potash.

And now let us take up the *ruminantia*, or cud-chewing animals, of which their chief characteristics are their four stomachs and their hoofs. Although there exist in these animals four stomachs, we may say one alone is real, the three others being pseudo stomachs. These animals are all a timid race, and hence their digestive organs are all so constituted that they can crop food in great haste, deposit it in their stomach receptacle, and masticate it at their leisure. The deer, gentlemen, is the first ruminant animal I have occasion to describe to you; and the most remarkable peculiarity of this genus is the elongation of the frontal bone in the male animal, and to which the term horn is applied, but, in reality, horn it is not.

These horns, as they are called, the animal sheds every year, and their presence is evidently connected most intimately with the sexual function. During the rutting season these animals indulge in violent contests, when the strongest gains the day. I need not say we have no parallel to this amongst the human race; in which the strongest men are not invariably preferred.

I mentioned that the horns fell off every year; this is brought about by the deposition of bony matter around the blood-vessels supplying the horn, owing to which circulation is impeded, and death of the horn results. Being dead, it falls off by a sort of natural bony exfoliation.

(To be continued.)

ON GEOLOGICAL MINERALOGY.

By Professor TENNANT, of King's College.

(Continued from page 214.)

Mr. Tennant delivered the second lecture of his valuable course to an increased auditory, amongst whom we noticed a gentleman who has arrived in England with a large mass of Californian gold.

The lecturer commenced his subject by discussing the physical characteristics of minerals; to illustrate which subject he had recourse to the table which we append.

PHYSICAL CHARACTERS.

External Form.	Structure.	Fracture.
Frangibility.	Hardness.	Transparency.
Lustre.	Colour.	Flexibility,
Double Refraction.	Touch.	Taste.
Odour.	Streak.	Powder.
Adhesion to the Tongue.		Magnetism.
Electricity.		
Phosphorescence.	Specific gravity.	

Degree of hardness was a most important physical characteristic, and for the purposes of avoiding indefinite terms, such as hard, rather hard, and very hard, tables of hardness were employed.

The first tables of hardness were those introduced by Cronstedt, in which the number 20 was fixed on as the basis. The most commonly used table at the present day is that of Mohs, the extremes of which is the number 10, as will be seen in the accompanying table:—

TABLE OF HARDNESS OF MINERALS.

1. Talc 23, yields to nail with ease.
2. Gypsum 90, yields to nail with difficulty.
3. Calc. Spar 71, does not yield to nail.
4. Fluor spar 53.
5. Apatite 52.
6. Felspar 52, as hard as soft iron.
7. Quartz 26, same hardness as phenacite.
8. Topaz 6, resists all metals.
10. Diamond 1, resists all other substances.

The figures on the right hand of this table of hardness are indicative of the number of species having a degree of hardness equal to the substance placed as the example. Thus there are six substances having the hardness of the topaz, 71 of calc. spar, and so on.

The lecturer then adverted to specific gravity, as a means of discriminating between mineral species, and pointed out, as the great advantage of appealing to specific gravity, that the substance operated upon was not destroyed. The general plan of taking specific gravity consisted in weighing the body first in air, then in water, then dividing its weight in air by its loss in water; but in particular cases different plans must be followed. For instance, a compound mineral mass of large size, made up of many constituents irregularly distributed, could not have its specific gravity estimated in this way. A good plan in such a case was to obtain a fair average of the compound mineral powder, and press it into a form of given size, when the quantity necessary to fill this form might be compared by comparing its weight with an equal bulk of some heavy compound—say lead.

The professor remarked that, by the indications of specific gravity alone, it had been determined that a blue crystal in the Russian division of the Great Exhibition was not a blue diamond, as had been imagined, nor phenacite, as labelled, but a blue topaz. Permission had liberally been given by the possessor for the application of any test necessary to individualize this mineral; but for obvious reasons inquirers had been averse to have recourse to any destructive means. An attempt had indeed been made to scratch it with a diamond ring, but no scratch resulted, and hence it was unsafely inferred that the substance was as hard as the diamond, in which case it must have been the diamond itself.

This test, however, was not properly applied; the edges of diamonds set in rings are often blunted by the lapidary's stone to such an extent, that it would be unsafe to trust to their indications of scratching and cutting. Mr. Tennant referred to his table of hardness for the purpose of showing that phenacite was associated with No. 7 of that list.

In the last week's lecture Mr. Tennant exhibited a large mass of Californian gold; it weighed 3 lb. 1½ oz. He intimated that the mass in question had now been melted down, and had yielded 1 lb. 2 oz. quartz, 1½ lb. of pure gold, and about 20 per cent. of silver on the amount of gold. It was singular, the lecturer remarked, that the purest gold was found in small masses. Large lumps of gold mineral always contained silver; the reason was not known, but the fact was undoubted. The golden service of plate, to be seen in the American division of the Great Exhibition, and made from Californian produce, was whitish in colour, very different from the colour of gold articles of English manufacture, and somewhat resembling the old guineas. This peculiar tint was due to the presence of a considerable amount of silver.

Having proceeded thus far with his preliminaries, the

lecturer applied himself to the task of classification of subject. Classifications, he informed his audience, were conventional, and various arguments might be adduced in favour of each that had been devised.

The classifiers of the Parisian Museum made carbonate of lime their studying point. The British Museum adopts the classification of Berzelius. The authorities of the United Service Museum, in Scotland-yard, follow the precepts of the old edition of Phillips's mineralogy. The museum of King's College was arranged in accordance with the last edition of that work. Whatever the arrangement followed, the characteristic qualities of minerals must receive the same kind of study.

Referring to the necessity the student of mineralogy was under to cultivate a knowledge of chemistry, Mr. Tennant said the mere chemical student might consider *grey copper*, as it was called, a mere ore of the metal indicated, whereas one tenth of all, and by far the most valuable ingredient, was silver.

In many cases the great value or rarity of certain constituents of a mineral give the denomination; and in other cases it was difficult to say how to denominate some of our common minerals; whether, for instance, under the head of silicious or aluminous—so equally balanced were the two constituents.

With regard to text-books to be employed, probably the best would be the joint production on Mineralogy, by Professor Miller, of Cambridge, and Mr. Brookes, but it would not appear until after Christmas. Dana's "Manual" he could also recommend, and Ansted's "Elementary Course." Phillip's "Manual" was in a manner indispensable, because the King's College Museum was classified in accordance with that book.

Referring to the British Museum specimens, the lecturer remarked that in many cases minerals were to be found under a collateral head; thus in the British Museum the purest specimens of phosphate of lime were to be seen under the head of tourmaline. This was inconvenient, and hence the Scotland-yard Museum, although smaller, was much better for study. The museum of King's College contains about 2500 specimens, in addition to which Mr. Tennant had the use of 6000 more belonging to the Stowe collection.

The lecturer now proceeded to treat of the earthy minerals, and first directed his attention to silica. Silica was considered by Mr. Phillips the oldest formation—but this did not follow; indeed, in the economy of the globe silica was frequently dissolved. The lecturer directed attention to the fact of flint pebbles often containing organic remains, and handed round specimens in proof of this fact. Two silicious lumps thus handed round displayed impression of the *Galeatites subrotundus* and the *Spatangus subglobosus*.

Under certain circumstances silica crystallises, and thus constitutes quartz; when quartz is absolutely pure, it may be denominated rock crystal, of which the finest specimens come from Brazil. With the object of studying the characteristics of quartz a fragment of rock crystal may be selected. It breaks with a conchoidal fracture, scratches glass, does not yield to the knife, nor is it affected by any acid save the hydro-fluoric. In the ordinary blowpipe flame it is infusible, though it melts under the influence of the oxyhydrogen flame.

If powdered, mixed with potash or soda, or their carbonates, or borax, and then exposed to a common blowpipe jet, it readily fuses into a white bead. This is a most useful chemical characteristic of silica, and is indicative of its purity; for if it contain associated metals of the calcigenous group, the bead of glass thus formed is invariably coloured.

(To be continued.)

PROGRESS OF SCIENCE AT HOME AND ABROAD.—TRANSACTIONS OF SOCIETIES, COMMUNICATIONS, &c.

PARIS ACADEMY OF SCIENCES.

Sitting of October 6.

ON A NEW METHOD OF SEPARATING PHOS- PHORIC ACID FROM METALLIC OXIDES.

By M. ALVARO REYNOSO.

M. Pélouze presented a communication from M. Reynoso on the above subject to the Academy.

The great analogy which exists between the chemical properties of the oxides and those of the phosphates, of which they form a part, has always stood in the way of obtaining a method for effecting their separation in a sure and rapid way.

None of the different processes, proposed one after the other by MM. Berzelius, Otto, Fresenius, and H. Rose, enable us to effect a complete isolation of these substances; a portion of the phosphoric acid always remains in the precipitate retained by the oxides. A method of ascertaining the exact amount of this acid is a point of great importance, especially in the analysis of soils and the ashes of plants, the composition of which possesses great interest in an agricultural point of view.

The following process of M. Reynoso, at once rapid and sure, enables us to effect this separation in the most complete manner.

This process is based on the observation made by M. Reynoso, of the insolubility of the phosphate of binocide of tin in nitric acid, whilst all the other phosphates are soluble. The process is as follows:—A portion of pure tin, or the ordinary commercial metal, is weighed (the quantity of stannic acid contained in it having been previously ascertained), and introduced with the phosphate into a small flask; nitric acid in excess is then added, and the mixture boiled; when all the tin is dissolved the contents of the flask are thrown on the filter, the precipitate is washed, and heated to redness by means of a spirit-lamp, and then weighed; the weight of the stannic acid contained in the tin employed is deducted, and the surplus gives the quantity of phosphoric acid present in the phosphate.

Several precautions must, however, be taken, the neglect of which will show either a loss or an excess of phosphoric acid.

1. In burning the precipitate all circumstances tending to favour reduction must be avoided, otherwise the stannic acid will be decomposed, and a loss will arise.

For this purpose it is only necessary on burning the filter to add a few drops of nitric acid, and especially to take care that the flame of the lamp does not rise above the edges of the capsule; if the flame reach higher, reduction will take place; by adding nitric acid it is true that this inconvenience is prevented, but in this case there is danger of projections. In each case we may ascertain that reduction has not taken place by the precipitate preserving its yellow straw-colour; if it acquires a brown colour, we at once have a proof that reduction has taken place.

2. The compound which phosphoric acid forms with the binocide of tin, readily absorbing moisture, the precipitate must be washed immediately after it has been calcined, and whilst still hot; without this precaution we shall get an apparent increase over the real quantity of phosphoric acid present.

The value of this process may readily be tested by putting some phosphate of soda in a flask with a quantity of tin, equal to three times the weight of the phosphate, and boiling with nitric acid diluted with its own volume of water; in the filtered liquor saturated by ammonia chloride of sodium gives no precipitate.

The following are the results of some analyses which have been made by this process:—

Pyrophosphate soda employed	gram.
Tin	0.367
Phosphoric acid theory, 0.196, result of experiment ..	1.000
Stannic acid	0.191
.....	1.272
.....	1.468
.....	1.463
Pyrophosphate of soda employed.....	0.361
Tin	1.164
Phosphoric acid theory, 0.194, result of experiment ..	0.190
Stannic acid	1.480
.....	1.480
.....	1.674
.....	1.670
Pyrophosphate of soda employed.....	0.200
Tin	1.000
Phosphoric acid theory, 0.107, result of experiment ..	0.190
Stannic acid.....	1.272
.....	1.379
.....	1.378

M. Reynoso stated that he would at a future period present to the Academy a series of experiments relative to the action which water and a high pressure exercise on the pyrophosphates. At present he confines himself to a statement of the general result obtained. All the pyro-phosphates capable of forming insoluble phosphates have the property, when submitted to the action abovementioned, to divide into acid phosphates which remain in solution, and tribasic phosphates; which being insoluble, precipitate.

The action is very distinct and striking in the case of pyrophosphate of silver, whilst that the tribasic phosphate is yellow. In the solution all the characteristics of the salts of silver and of the phosphates are noticed. The pyrophosphate of lime comport itself in the same manner.

ON THE PRESENCE OF PROPYLAMINE AND CARBONATE OF AMMONIA IN PLANTS.

By M. DESSAIGNES.

MM. Lassaigne and Chevalier, in a work published some years since, pointed out the fact of the presence of carbonate of ammonia in a living plant, the *Chenopodium vulvaria*. The analogy between the odour of this plant and that of one of the ammoniacal bases of the series discovered by MM. Wurtz, Anderson, and Wertheim, we speak of propylamine, caused M. Dessaignes to suspect, two years since, that this alkali might be found in *Chenopodium vulvaria*. Having during the present season collected a large quantity of this plant, M. Dessaignes submitted his conjecture to the test of experiment, and the result showed that it was well grounded. He distilled about 40 kilogrammes of the vulvaria at several operations, sometimes with a weak solution of caustic potash, and at other times with a solution of carbonate of soda. The product of distillation, saturated with hydrochloric acid, was evaporated to dryness, and then treated with concentrated alcohol, which left a large quantity of ammoniacal salt undissolved. The alcoholic solution was precipitated by chloride of platinum. The precipitate, washed with alcohol, and dissolved in a small quantity of hot water, formed, on cooling, large orange-red crystals of a double salt of platinum and organic base, which was purified by new crystallizations from the small quantity of chloro-platinate of ammonia which it still contained.

M. Dessaignes submitted the pure double platinum salt to several analyses, the numbers of which agree closely with the composition of chloro-platinate of propylamine, and give in 100 parts:—

Experiment.	Theory.
C, 13.93	C ⁶ , 13.57
H, 3.91	H ²⁰ , 3.77
N, 5.10	N ² , 5.28
Cl, 40.50	Cl ⁶ , 40.17
Pt, 37.02	Pt, 37.19

106.46

99.98

In addition 0.328 grammes of double salt of gold gave

0.162 grammes of gold, or 49.39 per cent.; theory indicated, 49.62.

Propylamine, therefore, exists ready formed in a living plant at the same time with ammonia. Its presence in that plant coincides with the great quantity of a proteic substance coagulable by heat.

NEW METHOD OF APPLYING COLLODION FOR PRODUCING OCCLUSION OF THE EYELIDS.

The process of occlusion of the eyelids, by bringing them together, and applying collodion over them, presents two inconveniences. If a drop of the collodion reaches the conjunctiva, it produces irritation, always very painful, and especially troublesome if, as is generally the case, the membrane is already inflamed. In the second place, if it be desired to examine the eye before the collodion has spontaneously detached itself, it becomes necessary to remove it with ether or scissors, both delicate and irritating processes, often causing pain and apprehension to the patients.

M. Barrier, of Lyons, employs a process which avoids these difficulties. A thread is placed vertically on the upper eyelid; a small piece of fine linen is then dipped in collodion, and placed on the lid, a little above the root of the eyelashes, so as to fasten down the thread. The same thing is done on the lower lid. To keep the lids closed, it is only necessary to tie the threads in a knot or bow; and it is quite easy to open or separate the eyelids.—*Annales d'Oculistique*, as quoted in *Gazette Médicale*, August 16, 1851.

LOCAL APPLICATION OF WINE OF SQUILLS IN HYGROMA.

A Spanish journal, *La Union*, reports, in the March number, a case of hygroma cured by the application of compresses wetted with wine of squills. The patient was a woman fifty years old, who had had for a year a tumour of the size of a hen's egg on the front of the patella. Dr. Serrano, who was consulted, proposed iodine injection; but, as the patient objected, he was led to employ a remedy which he had already found successful in a case of hyarthrosis of the knee. Cloths dipped in wine of squills were applied, and fixed by means of a bandage; they were frequently renewed. Under this application alone, and without any particular regimen, the tumour gradually and completely disappeared in thirty-six days. Five months after there was no return.

Hygromas, or collections of fluid in the patellar and anconal bursae, must be treated by resolute applications, or by puncture followed by iodine injection. Very severe symptoms have been known to follow the operation of opening them. The wine of squills, proposed by Dr. Serrano, is, perhaps, not so efficacious as a local application, as the concentrated solution of sal ammoniac, made according to the formula of M. Jobert de Lamballe, in the proportion of from sixty to a hundred and twenty grammes of the salt to five hundred grammes of lime-water. Compresses, dipped in the solution, are applied, and frequently repeated. It is more likely to be efficacious when the tumour is of recent origin. M. Jobert has obtained some very successful results from its use.—Abridged from *Journal de Médecine et de Chirurgie Pratiques*, June, 1851.

ON A NEW METHOD OF PREPARING NITROGEN AND CHLORINE.

By M. MAUMENÉ.

Sitting of October 13.

We are already acquainted with numerous processes for the preparation of nitrogen; but, independently of the decomposition of atmospheric air by means of the metals, these processes are neither simple nor convenient. The following mode of preparing nitrogen (which at the same time furnishes

chlorine), is given by M. Maumené in his communication. The process consists, in causing nitrate of ammonia to act on the hydro-chlorate of the same base, at a slightly elevated temperature. Theoretically we have $2(\text{Az O}^6 \text{H}^3 \text{Az H O}) + \text{H}^3 \text{Az H Cl} = 5 \text{Az} + \text{Cl} + 12 \text{H O}$, and experiment agrees with theory. As soon as the temperature of the mixture reaches the fusing point of the nitrate, a very strong action ensues, furnishing the results indicated. After the first few moments the fire should be withdrawn; the decomposition proceeds, and is almost entirely effected, without the aid of further heat.

The process thus performed may be attended with danger, for two reasons: 1. Because it gives off the products, which are entirely gaseous, with very great rapidity; a rather large quantity of materials will, therefore, cause a risk of explosion. 2. Because the mixture of the two salts assumes a hasty condition, and swells considerably, sometimes choking the neck of the retort. These difficulties may, however, be remedied; only a small quantity of materials should be operated on at a time, and these should be previously mixed with about four times their weight of sand. The experiment is thus easily performed, as in a few moments the heat causes the gases to be given off quietly, and without fuming; the heat is then somewhat slackened, and the operation proceeds in a regular manner. 75 grammes of dry nitrate of ammonia and 26 grammes of dry hydrochlorate of ammonia, mixed with 400 grammes of sand, yield 26 litres of nitrogen, and 5 litres of chlorine. When these proportions are strictly attended to, and the salts employed are pure, nothing but nitrogen and chlorine are obtained, there being no production of chloride of nitrogen.

M. Maumené remarks that this method of obtaining chlorine without binoxide of manganese, and other substances which are daily increasing in price, may perhaps prove of much value in the arts.

ON THE SIMULTANEOUS ACTION OF A SALT OF PROTOXIDE OF IRON AND ORGANIC MATTER ON NITRATE OF SILVER.

By M. VEZU.

In testing some mineral waters for chlorides by the aid of nitrate of silver, M. Vezu obtained instantaneously a blue black precipitate by the addition of this re-agent. Various endeavours to ascertain the nature of this precipitate have led him to the conclusion, that, under the influence of proto-salt of iron and organic matter contained in this mineral water, the nitrate of silver is decomposed, the oxygen of the oxide of silver going to the proto-salt of iron, which passes to its maximum state of oxydation, and thus the silver is precipitated in a metallic state. "May we not, therefore, conclude," says M. Vezu, "that the nitrate of silver is immediately reduced by the salts of the protoxide of iron held in solution in the water containing some elements of organic matter; and may we not see in this experiment a new example of the phenomena which occur under the influence of that force, at present but little understood, which we term *catalytic*, and which plays a part in many interesting phenomena, the number of which is daily increasing?"

DISEASE OF THE VINE.

M. Adrian de Jussieu read a communication from M. Gensoul, of Lyons, relative to the disease which has this year done so much damage to the vines, in which he recommends the employment of an alcoholic solution of camphor, by the use of which he succeeded in clearing his cacti from the acari which infested them.

DAGUERRETYPE.

Several specimens of daguerreotype taken by MM. Macaire, of Havre, were submitted to the notice of the Academy, but the process was not divulged. They represent objects in

motion in a far less confused manner than most of the photographic sketches which have yet been attempted. One of these plates presents a view of the sea; the waves are represented in ridges, and without that foaming and diffuse appearance which results from the succession of waves during the impression of the object on the plate. If these artists have not attained complete success, they have at least approached it very nearly.

MUCILAGE OF PINUS BALSAMICA.

Dr. Cleveland, in a paper (*New York Register*, Sept. 1, 1851) on the American indigenous plants yielding mucilage, remarks: "The twigs of the fir balsam, when of but one or two years' growth, contain a large amount of mucilage, which, as it is combined with the balsam, is superior to that obtained from other sources for pectoral complaints, and those of the kidneys, bladder, or urinary passages, or of the stomach, as well as gleet, leucorrhœa, &c. This is to be prepared by selecting the extremities of the limbs of young trees, and, after carefully stripping off all the leaves, the bark is to be separated from the wood, and steeped in hot or cold water."

CANTHARADINE OINTMENT.

This may be prepared by rubbing together equal parts of the ethereal solution and lard or mutton suet. Frictions made with this ointment induce vesication in a few hours. It is much used in Prussia.

SPIRÆA ULMARIA, OR MEADOW-SWEET, IN DROPSY.

M. Tessier, of Lyons, has been led, by the observations of M. Obriot, a priest in the department of Haute-Marne, to make experiments on the effects of spiræa ulmaria in certain cases of dropsy. He has published his results in the *Bulletin de Thérapeutique*.

A person in the prison at Perrache had ascites, connected with intestinal irritation. After all other known diuretics had been tried in vain, M. Tessier prescribed a quart of the decoction of spiræa daily. From the third day the patient passed much more urine than before. At the end of sixteen days the medicine was suspended, and the urine immediately became scanty. It was resumed, and continued for six weeks; and the ascitic effusion was absorbed without the production of any debility. In a case of hydarthrosis of the knees the decoction of spiræa seemed to aid materially the action of vesicants by increasing the renal excretion. In a young woman affected with heart-disease, it produced abundant diuresis, without lowering the circulation like digitalis. A young man accidentally took some of the decoction in mistake for a pectoral ptisan. Four days after he spontaneously remarked that he had passed an enormous quantity of urine for forty-eight hours after. His condition became improved.

M. Tessier believes that meadow-sweet possesses diuretic properties; that it is also slightly astringent and tonic; that it is agreeable to the taste, and produces no disturbance of the stomach or of the nervous system. All parts of the plant seem to be endowed with the same properties: the flowers are perhaps less active. The spiræa grows in March and April, and flowers in May and June.—*Journal de Médecine et de Chirurgie Pratiques*, June, 1851.

SPECIAL COUNCIL MEETING OF THE PHARMACEUTICAL SOCIETY.

Thursday, October 16.

On Thursday a special meeting was convened, for the purpose of taking into consideration the refusal of the secretary of the society to furnish our representative with a reporter's ticket; as also to receive his fee as a student of the Pharmaceutical Society.

Our reports of Dr. Pereira's lectures have caused a most anomalous opposition in a society professedly instituted for the benefit of the chemists and druggists. We have not time or space to give in extenso the particulars of all that transpired. Suffice it to say that Dr. Pereira threatened us with all the terrors of the law for publishing his lectures; and Mr. Bell has been advised that even the taking of notes for the purpose of publication is illegal. We shall see. The lectures will continue to appear.

With regard to the non-admission of reporters, that point was carried; and Mr. Bell wanted to establish the rule, that no one except a member should be allowed to receive a ticket of attendance on lectures. This point, however, he could not carry. Considerable dissatisfaction is expressed at the expense of the society's laboratory operations, and Mr. Redwood has been restricted as to his disbursements in future.

ON THE INTRODUCTION OF SOLUTIONS OF LEAD INTO THE BLADDER, FOR THE DECOMPOSITION OF PHOSPHATIC CALCULI.

By S. ELLIOTT HOSKINS, M.D., F.R.S.*

[From Cormack's *London Journal of Medicine*.]

In a paper which the Royal Society did me the honour of publishing, some account was given of the decomposition of phosphatic calculi, by solutions of certain salts of lead, so dilute as to admit of their retention by the living bladder, without irritation or inconvenience.

The adaptation of the principle of double decomposition to the disintegration of vesical calculus is in strict accordance with chemical usage; it supplies a class of agents, more energetic as regards the concretion, and less injurious to the organ in which it is contained, than any of the uncombined solvents hitherto employed. The solvent, no matter how dilute, can only be tolerated for a minute or two at farthest, and cannot soon be repeated; the decomponent, on the contrary, is retained from ten to fifty minutes without discomfort, and may be repeated daily, or oftener if necessary. The cause of this difference is sufficiently obvious: the active agent of the decomponent is liberated gradually, and neutralised by the earthy bases of the calculus, before it can come in contact with the living tissues; whereas the former class of fluids causes such immediate irritation, that their ejection is required before any impression can be made on the concretion. The base of the decomponent unites with the acid of the calculus, while the acids of the former combine, and form soluble salts, with the bases of the latter. The combined acids are set free in definite proportions, neutralised in their nascent state, and removed from the sphere of action before any stimulating effect can be exerted on the bladder.

The cases which I am about to bring forward, although sufficient to prove the unirritating effect of these decomponents, when thrown into the bladder, are by no means calculated to test the amount of their action on the very concretions which they decompose so energetically out of it. It is not, however, because I cannot cite a host of triumphant cases establishing both points, that the observations I have been enabled to make, as to the mild character of the solutions, ought to be withheld.

CASE 1.—Mr. F., aged 72, a patient of Mr. Coulson, was affected with palsy of the bladder; the urine was occasionally alkaline, and charged with phosphatic deposit. He suffered much from the accumulation of ropy mucus; it often prevented the urine from flowing through the catheter, without the introduction of which the bladder was never evacuated. The instrument, when passing through the prostatic portion of the urethra, was felt to grate over a considerable extent of calcareous matter impacted in the gland. He had experienced mitigation of symptoms, as regarded the mucus, from the injection of very dilute nitric acid; but in consequence of the irritation it occasioned, he could not bear its repetition a third time. Nevertheless, a solution of lead was, from the first, retained for twenty minutes; it produced a

* Philosophical Transactions, Part I. 1843.

soothing effect at the time, and was not followed by the slightest annoyance. It was continued daily, or every second day, for six weeks, and often retained for half an hour. On rejection the fluid appeared milky, contained flakes of coagulated mucus, and yielded a considerable precipitate of phosphate of lead. The eyes of the catheter often contained gritty particles enveloped in mucus, which yielded a sensation similar to that produced by rubbing the pineal gland between the fingers. At the end of the above-mentioned period, no grating sensation could be felt on passing the catheter; the injection was therefore discontinued for some months, but again resumed, in consequence of the recurrence of this sensation, and of the mucoid secretion. After being persevered in for some time, it was again left off, relief having been obtained.

CASE 2.—This gentleman was a patient of Mr. Guthrie. His general health had been very much impaired by long-continued suffering. Two calculi had been originally present in the bladder. One had been crushed, and the greater part of it removed; but the fragment retained was the cause of much uneasiness, especially when it rested on the neck of the bladder. The urine was alkaline and bloody, containing mucus, and apparently pus. A stricture also existed in the urethra. The bladder was very irritable, but bore the presence of the lead solution for twenty minutes, with no more inconvenience than that which resulted from the introduction of pure water. The injection was continued every second day for nearly a fortnight. Particles of calculus frequently came away some hours after its use; they consisted of oxalate of lime, cemented together by triple phosphate. The latter was rapidly acted upon by the lead solution. The patient died soon after. Both his kidneys were found to be diseased, containing pus; the right enclosed four calculi. One stone was found in the bladder, besides that which had been broken up by Mr. Guthrie. A very small portion of the latter remained.

CASE 3.—This was a patient of Mr. Key and Mr. Hunter. His bladder contained a large triple phosphate calculus. He had been lithotritised by another surgeon unsuccessfully. The operation had caused much pain and subsequent irritation, which had been soothed by injections of opium and warm water thrown into the bladder. The urine was neutral and turbid, containing blood and mucus. He occasionally passed calculi, of the size of small orange pips, which were readily decomposable by the lead solution. This fluid, when injected, was retained by the bladder without inconvenience, the first time for ten minutes, the second for half an hour, the third, fourth, and fifth, for fifty minutes. The rejected fluid deposited considerable quantities of precipitate on the filter. On one occasion it amounted, when dried, to eighteen grains of phosphate of lead.* Owing to some prejudice on the part of the patient, the injection was discontinued after the first week. This was unfortunate, as the case appeared to be favourable for testing the value of this mode of treatment.

CASE 4.—This was a patient of Mr. Copeland, aged 78, who had laboured for some time under vesical calculus, but on whom it was not expedient to operate. He used the solution for three weeks before his death. It was productive of a soothing effect on the bladder; and, whenever it was used, the ensuing evacuation of urine deposited a number of small crystals, but at no other time were they passed. After death, two large calculi were found in the bladder, and a smaller one sheltered behind an enlarged prostate. The surface of the concretions was studded with crystals, of the same description as those which had been brought away during life by the injection.

CASE 5.—A retired army surgeon, aged 72, had been lithotritised seven years before, after which he had passed many fragments of uric acid calculus, with phosphatic coating. The prostate was enlarged, and the constant use of the catheter required. He tried the solution of lead twice or thrice a day for about a fortnight; but, although the bladder was irritable, the liquid, as he stated to me, caused "no pain whatever; on

the contrary, it acted as a sedative to the lining membrane." He had, however, made up his mind to lithotomy, which was performed by Mr. Keate, and a stone, composed of fusible matter, urate of ammonia, and oxalate of lime, removed. On immersing fragments of this calculus in the solvent, he found that, "after a few hours, they had diminished one half in bulk and weight, the exterior coating being eaten away, and the nucleus appearing a very different substance, much darker and harder." About three months after the operation, he again felt uneasy sensations, as though another fragment existed. He continued the use of the lead injection, which he found very soothing.

CASE 6. Another patient of Mr. Coulson had long been suffering from affection of the urinary organs. He occasionally passed particles of calculous matter, but no stone could be detected in the bladder. This organ was paralysed, and required the constant introduction of the catheter for its evacuation. This gentleman was subject also to severe spasms, from the retention of a morbid secretion of vesical mucus, which, on being voided, was found to contain particles of phosphate of lime. He derived "much comfort" from the injection of the lead solution, and found that it lessened the secretion of mucus, facilitated its expulsion, and thereby lessened the frequency of painful calls to evacuate the bladder. There appeared to be also a greater disposition to expel the urine by natural efforts.

Other cases could be adduced, but the foregoing are sufficient to prove, not only that the bladder, under irritation, tolerates the presence of these solutions of lead, but also that they act as sedatives, and exert a favourable influence, directly and indirectly, on the morbid secretion of mucus which exists in cases of this nature.

After having made trial of most of the vegetable supersalts of lead, all of which act, more or less, as unirritating decomponents, I have returned to the use of that originally proposed, the nitro-saccharate,* as by far the most effective. That prepared for me by Mr. Garden, of Oxford-street, is much more energetic as a chemical agent than my own, and equally mild in its physiological effects. It is likewise more decidedly an organic salt, which I consider essential to the fulfilment of the ends in view; and I am strengthened in the opinion that sugar is a necessary ingredient, from the perusal of two papers, one by M. E. Peligot, "On the Combinations of Sugar with Lime," and another by M. Barreswill, "On the Solution of Carbonate of Lime in the Saccharates."

One grain of the salt, superacidulated with five drops of strong acetic acid, is the proper proportion for admixture with each fluid ounce of water.† It is essential that the salt and the acid should be incorporated before the addition of the water, and that the whole should be brought to the boiling point. Superacidulation is necessary on many accounts; it secures perfect solution, increases the decomposing activity of the liquid, and prevents the formation of any carbonate of lead.

As the salts contained in the urine tend to decompose the solution, and lessen its effects on the concretion, the bladder should be evacuated, and washed out with tepid water before the lead fluid is introduced. A double-current caoutchouc catheter is the best for this purpose, as it enables a continuous stream to be employed, and as, on account of its flexibility, it is less liable to irritate the urethra, which should be sedulously avoided. From four to eight fluid ounces of the solution may be thrown into the bladder at a time, and renewed every ten or fifteen minutes, as often as may be deemed proper. By renewing the liquid at short intervals, much greater effect on the calculus is ensured than when it is allowed to remain longer; for the precipitate formed by decomposition soon envelopes the stone, and puts a stop to further action, until a fresh surface is exposed. Exercise during the retention of the injection increases its effect. Some slight revulsion may be produced by the first introduction of

* Philosophical Transactions, 1843, p. 11.

† The decomposing power of these solutions is in inverse ratio to their concentration; for instance, a saturated solution of the acetate, superacidulated pretty freely, is inert; whereas, in the above proportions, decomposition of phosphatic calculi takes place rapidly.

* For this quantity of phosphate of lead, the equivalent is twelve grains of ammonio magnesian phosphate.

this, or any other fluid, into the bladder; when such is the case the operation should be remitted for a day or two, and cautiously renewed. The injection may be either warm or cold, as may be most agreeable to the sensations of the patient. Warmth favours the decomposition of the calculus.

If used with proper precautions, I have found that the lead solutions exert as sedative and salutary an influence on the lining membrane of the bladder, as they do on external surfaces under inflammation. They also act upon the mucus, which is so abundantly formed in cases of this nature, coagulating it into short curdy flakes, which are easily passed through the urethra.

When the urethra itself is inflamed, or abraded, the injection will be injurious, for the lining membrane of the canal is, I believe, more sensitive than that of the bladder. The introduction, therefore, of decomponents should be had recourse to, either before lithotripsy, or after the urethra has recovered from the effects of the instruments employed, but can never be used, with any prospect of success, where organic disease of the bladder or prostate exists. The injection should not be employed during the internal exhibition of hydrochloric acid, although it may be freely used when nitric acid is administered. When the bladder is not very irritable, a dilute nitric acid injection, alternating with the lead solution, will hasten decomposition.

The two facts established with respect to the lead salts, viz., first, their toleration by the bladder, and, secondly, their chemical action on calculous concretions, induce me to hope that they may become useful agents in the treatment of various other affections of the urinary organs. I have never presumed to imagine they would prove specific solvents for the stone; but, I trust that, where surgical operation is inadmissible, they will be of some avail for relief, if not for cure, by smoothing asperities, and removing the outward phosphatic coating of calculi, so as to bring them within the verge of the crushing forceps; in short, that they may avail for partial, if not for entire disintegration. The latter is more likely to happen where layers, composed of the urates or oxalates, are bound together by phosphatic cement. On this species of calculus, they are calculated to act as highly carbonated waters do on those of another description.

"Nor is the action of highly carbonated waters," says Dr. Prout, "confined to their mere solvent effects; they undoubtedly possess disintegrating power; that is, the power of disturbing the attraction, both cohesive and adhesive, by which the molecules of the calculi are held together, so as to render them brittle and easily broken into fragments." This is an additional reason for using decomponents before recourse is had to lithotripsy.

Besides the kind of cases already adduced, there is one variety for which decomponents seem to be peculiarly adapted, viz., concretions in the prostate gland. No instrument hitherto devised has been successful in dislodging them. The first case, however, mentioned in the present paper, goes to prove that a considerable quantity of calcareous matter was removed from the prostatic portion of the urethra by the use of the lead injection.

In the first experiment communicated to the Royal Society it was stated, that one hundred grains of calculus, immersed in lead solution for forty minutes, had lost twelve grains. In the second experiment, the quantity dissolved from a fragment weighing thirty-seven grains was, after half an hour's immersion, eight grains. Subsequent experience has verified these observations, and proves that, under favourable circumstances, decomposition takes place in definite proportions; so that, from the precipitate of phosphate of lead, the quantity of ammonio-magnesian phosphate which has been decomposed may be securely estimated.

Since these circumstances obtain out of the bladder, by means of a fluid which can be borne by that organ with impunity, we may reasonably hope, that the mere transference of the scene of action from the exterior to the interior will not materially affect the results.

The foregoing communication contains the substance of a paper read before the Royal Medical and Chirurgical Society, the debate on which was founded chiefly on a solitary case, confessedly one of the most unfavourable that could have

been selected; one in which "nothing could be injected into the bladder without producing great irritation." The consequence was a natural disinclination to give the lead solution further trial. This paper not being deemed worthy of publication, and the "Philosophical Transactions" not being read extensively by medical men, the subject has not hitherto been before the profession. Its present publication arises from fortuitous circumstances, and a conviction that there are certain conditions in which the means recommended are likely to be beneficial, rather than from any desire to assume peculiar merit, or from motives of personal interest. I am as far removed by local position, if by nothing more, from the influence of the one, as I am indifferent to the other.

Having ascertained that a certain solution, mild enough to be tolerated by the human bladder,* exerts much chemical influence on phosphatic calculi, I am desirous of engaging the attention of those among my professional brethren whose abilities and opportunities may enable them to pursue the investigation more thoroughly than I can.—*London Journal of Medicine.*

Guernsey, Sept. 3, 1851.

Chemical Record

AND

DRUG PRICE CURRENT.

SATURDAY, OCTOBER 18, 1851.

In commencing our journal, and in every subsequent phase of its progress, we have been actuated by the one leading principle, of seeking the best means of rendering it useful to the greatest number.

The CHEMICAL RECORD appealed for support to a class, it is true—but to so large a class that its boundaries could not easily be discerned. All who in any way are connected with chemical operations, directly or indirectly—all who are concerned in pharmacy, agriculture, medicine, or the arts—all who, as amateurs, devote a portion of their time to the study of chemical phenomena—they constitute our class; which, in its magnitude and numerous sub-divisions, can only be justly assimilated to those large groupings which the naturalist avails himself of in studying the material creation.

A very large—perhaps the largest—order of the class to which our journal would minister, we felt to be the chemists and druggists; and, in the furtherance of our desire to advance their interests, we determined to give them from week to week a price current of drugs;—determined, in fact, to make this a leading peculiarity of our journal. Experience and testimony—proofs to which a rational journalist will always be amenable—have demonstrated to us that, if our price current had assumed a more secondary character than we have hitherto given it, the chemists and druggists would not have complained. By the wholesale druggists it is considered invidious; by the retail druggists—or at least by many of them—it is pronounced of more limited utility than we had thought; whilst others have injuriously circulated reports of its being incorrect; and it is this part of the objection which we feel has launched at us an unjust allegation. The price current may not have proved as useful as we hoped; but no pains have been spared to make it correct; and we have means as good at

* My own eye was the first test of its mildness.

least as those commanded by any one else—better than by most—for supplying the newest information concerning the fluctuations in the price of drugs.

Of this enough. Our price current will very shortly be restricted to much narrower dimensions in our journal than it has hitherto been made to occupy, and will not appear every week; meantime, each of our subscribers may have, by addressing us a private letter, all the specific information he requires.

One word more: our desires to improve the efficiency of the Pharmaceutical Society, and to rescue it from the machinations of a clique, have thrown us into a much more intimate communion with leading members of the council than we hoped for or imagined.

By the co-operation of gentlemen, officially connected with the Pharmaceutical Society, we shall in future be put in earliest possession of all that is new and good amongst the lectures, laboratory experience, and council meetings of that community. Indeed, our readers may now consider the *CHEMICAL RECORD* as the authorized organ of the most enlightened members of the council of the Pharmaceutical Society; and in a few weeks we trust to be able to announce a participation in its editorial management by a gentleman from their number—a gentleman well known for his education and acquirements, no less than for his perfect acquaintance with the wants and wishes of the chemists and druggists at large.

CLERICAL HOMŒOPATHY.

SOME time since, when exposing the folly of homœopathic quackery, we indicated certain mental aberrations of the disciples of Hahnemann, which bore something of a religious stamp. The reverential awe with which the name of their apostle was spoken—the unreasoning acquiescence in his most preposterous dogmas—the reliance placed on his oracles expressions, only equalled by the summary repudiation of every testimony afforded by rational induction—these peculiarities appeared to confer on homœopathy a religious rather than a scientific aspect.

We were not aware, at that time, that a clergyman of the Church of England had proclaimed the divine attributes of homœopathy from a Christian altar—had, in the wanderings of his insanity, ventured to express convictions which, if uttered by a layman in a society of sober Christians, would have elicited a burst of summary indignation. Will it be credited that, in the year 1851, a clergyman of any denomination could be found who, in the possession of his senses, would have dared to proclaim from the altar of a London church the insufficiency of Christ's ministry on earth until the advent of Hahnemann? Is not the very notion of the possibility of such an occurrence revolting? Does not the reader already throw down these pages in disgust, and, strong in his indignation, accuse us of imagining an untruth? or, if he receives the assumption as true, and credits that such a doctrine was propounded, will the latter not seem to be the raving of a man gone irredeemably mad? A crowd of turbulent emotions arise whilst reading the sermon of the Rev. Thomas Everest, rector of Wickwar, and vice-president of the Hahnemann Hospital, in Bloomsbury-square; a sermon in which the doctrine we have vaguely alluded to, as being almost too blasphemous for utterance, is gravely propounded!

We give extracts from this sermon elsewhere—to which the reader may refer. If he can understand them otherwise than as ravings of a disordered intellect, his mental organization is not like our own. If the sentiments of Mr. Everest be pronounced rational, then do we tremble for the human mind. In future let us not vaunt ourselves upon reason, and draw up artificial limits between the true and the false. They are all empty sounds, idle words; cast them off, clear them away. If study, education, laborious research, careful induction—means hitherto believed to lead to the recesses of truth—be only fallacious chimeras—if the mind of man can only be enlightened by inspiration, let the doctrine be propounded boldly—let us at least not mock ourselves with delusions.

The homœopathic evangelist has gone too far, or not far enough. On one hand he takes no exception to the inductive origin of globulism; on the other, he, by inference, casts aside the counter testimony, also inductive, of all save Hahnemann himself, and claims of his besotted audience their belief in the absurdities of homœopathy as an article of Christian faith. What words of indignation can we find to adequately express our abhorrence of the doctrines of the Hahnemannic divine?—what words of pity for the doating mystics who listened so complacently to his discourse?—what measure of reprehension for those who, hearing and disbelieving, were yet content for worldly motives to listen to this insult offered to Christianity and their own understandings? Words we have not for these expressions; our human feelings rise turbulently within us; we are tempted to root out every thought of Hahnemann and his dupes from our brains, and consign them to silence for ever.

But reflection comes to demonstrate the selfishness of this course; so cankering a mental blight must not be allowed to steal over the intellect of man, without some attempt to restrain its pestilential influence. Long communion with the insane—solitary confinement—ill regulated mystic exaltations, drive men mad; and when a minister of God, episcopally ordained, feels it consistent with the duties of his high calling to become the public advocate of a medical system which is repugnant to every principle of reason, at variance with universally accepted truths—when he enunciates wild vagaries from the altar as immutable laws, and implies, if not expresses, that some divine inspiration warrants him in casting aside the most careful inductions of human reason—then it behoves all those whose ministry it is to sift falsehood from truth, and disseminate rational science, to stand forth and free the majesty of human intellect from the clouds of mysticism with which the insanity of ignorant enthusiasts would fain enshroud it.

Although we have hitherto dealt with the Rev. Mr. Everest in connection with the specific case of homœopathy, our strictures may with justice embrace a larger sphere of comment. For a while we may forget the absurdities of homœopathy; we may assume it, for argument's sake, to occupy the place which its votaries bespeak for it in the category of medical theories; we may assume testimony to be in its favour, and the opposition with which it is beset to be the result of human passion, prejudice, or caprice. Granting all this, still the fact remains the same—that homœopathy is a belief which professes to draw its support through the ordinary channels of experiment, observation, and induction; on the issue of which alone it should be prepared to

stand or fall. If pride, prejudice, and caprice are operating to retard its progress, one line of demonstration alone exists for rendering this retardation patent before all the world; that line of demonstration is supplied by observation and induction. All the axioms of homœopathy profess to be based upon experience—by experience, then, let them be proved. This is the only course open to the students of every other branch of inductive science, and homœopathy cannot plead exemption, without destroying the very basis on which its claim to be a science rests.

The gravamen of our censure against the Rev. Mr. Everest is—not the charge that he, a minister of Christ's gospel, desecrated his apostolic calling by becoming the altar-advocate of homœopathy in particular, but that he, a Christian minister, impiously dared, in the very house of God, to elevate into a religious myth a doctrine which even its founder professed to be built carefully up from the records of experiment—to be the fruition of long and anxious human research. With equal show of reason might the preacher bespeak our credence in the propositions, that sulphuretted hydrogen precipitates lead white—that fire is cold—and ice burning hot. Our disgust at the blindness with which the reverend vice-president embraces the tenets of homœopathy, although great, merges in the indignation with which we view the insult he offers, no less to the Christian ministry which he unworthily represents, than to inductive philosophy; that firmest citadel of human reason, on which all physical science is based—and on which even Hahnemann professed to build his structure.

Does the Rev. Mr. Everest pretend to say, that the mental training necessary for the understanding of physical, nay, even moral science, is superfluous or bad? Does he mean to aver that the study of mathematics is useless to the astronomer—anatomy to the surgeon—the mutual re-agencies of bodies to the chemist—and logic to all? Surely the wildest enthusiast, who lays pretensions to a sane understanding, will not go the length of bespeaking credence to this extent. Then, granting homœopathy to be an inductive science—and even Hahnemann claims no more—by what authority does Mr. Everest dare to remove it from the authority of human investigation, and bespeak its acceptance as a tenet of Christian faith? By what authority does he dare to scatter his ecclesiastical censure over the entire membership of a learned and honourable profession, and impiously proclaim them and their *frantic medicines* to have been amongst the great causes of sins on earth and *souls in hell*? The very contemplation of the impious audacity in which the homœopathic sermon was conceived fills us with tremblings—we would fain lay down our pen in disgust! We cannot conclude, however, without re-echoing the expression of Dr. Cowan, of Reading, made at the Provincial Medical and Surgical Association at Brighton:—"The increase of homœopathy I look upon with a very grave view—I regard it as one of those portentous moral phenomena which are stealing over the age. It is not the practice of medicine alone that is at stake—it is the *practice of sound thinking*." The practice of sound thinking seems indeed at stake; and if the darkening cloud of mysticism, of which homœopathy is but a special manifestation, be not combated by the vigorous efforts of sane and reasoning men, we foresee an overshadowing of the whole system of inductive philosophy.

The age is afflicted by a mental epidemic; more to be feared, because more insidious, than the physical epidemic which causes bodily disease. It suffices that an enthusiast advances unheard-of pretensions, for a number of ignorant, weak-minded individuals to join his standard, and swell his ranks. Let the imposition be countenanced by a few of high name and social influence—let it in fact become fashionable, and materials soon arise for perpetuating the deceit. When once fashion and riches appear in the ranks of imposture—then soon follow the knaves; who seek their harvest in the delusion of the rest.

If it be possible to extract one consolation from the sermon of Mr. Everest, it is this:—that he boldly removes homœopathy from the sphere of inductive reason, and receives it as a religious myth. At least, then, we ought not to be insulted in future by having the facts of inductive reasoning distorted, in order that they may square with the tenets of homœopathic mysticism.

As for the reverend vice-president of the Homœopathic Hospital, he is either blasphemous or insane; in charity, let us hope the latter.

REVIEWS.

HOMŒOPATHY*.

WE have just been presented with a pamphlet embodying the resolutions of the Provincial Medical and Surgical Association, at their meeting convened at Brighton, for purging the ranks of medicine from homœopathic empirics.

From a perusal of this pamphlet it appears that homœopathy, as understood by Hahnemann, constitutes but an infinitesimal portion of the tenets held by the larger number of the so-called homœopaths, who now swell the ranks of medicine, and disgrace its calling.

By some the infinitesimal doses are repudiated—by others a dynamic action of medicines is assumed for explaining away the inconsistency of well-recognized physical effect. By all we find cultivated a dangerous mysticism, which, under the guise of inductive philosophy, bespeaks the unreasoning faith of its votaries.

Homœopathy, or the farrago now so called, presents us with the anomaly of a system of belief confusedly built up on experiment and induction, but to which its votaries profess to be no longer amenable. That which was vouchsafed to Hahnemann in the way of deduction cannot be vouchsafed to later inquirers. His organon is regarded in the light of a bible—an inspired book; to doubt him is considered a sort of impiety; the whole system has become really, if not confessedly, a system of religion, not a system of medical inductive science.

It is vain to argue on a matter of faith. Let the homœopaths honestly confess that they are absolved from the trammels of experiment, and we have done with them. Henceforth they will stand before the world amongst the religious enthusiasts of the age. As a scientific journal, that kind of mental aberration would be no concern of ours; but the followers of Hahnemann, although violating the precepts of legitimate induction, profess to their disciples the most unbounded reverence for experiment, and, by sheer audacity, they have caused this assumption to be largely credited. The most audacious attempt to create for

* Report of the Speeches on Irregular Practice, delivered at the Nineteenth Anniversary Meeting of the Provincial Medical and Surgical Association, held at Brighton, August 13 and 14, 1851. London: Jehu Churchill, Prince's-street, Soho, 1851.

homœopathy a religious credence exists in the sermon of the Rev. Mr. Everest, quoted by Dr. Cormack. As we have commented on this elsewhere, it only remains for us to say that the reverend gentleman, in his zeal, has greatly damaged the position of his homœopathic brethren. A belief, founded and professing to depend on experiment, cannot be removed from the domains of reason to those of faith by the force of even pulpit declamation.

A sample of the reverend gentleman's homœopathic theology we will now present to our readers, as quoted by Dr. Cormack in his address to the members of the Provincial Medical and Surgical Association.

"Dr. Cormack said:—I have the honour, sir, to be commissioned to offer, for the acceptance of this great meeting, the report of the committee which was yesterday appointed to consider the course which the association ought to adopt, with reference to the prevalence of irregular practice and unprofessional conduct. The great amount of important business to be disposed of before we separate suggests the impropriety of a long speech; and yet it does seem essential for me briefly to state the general principles upon which the committee have proceeded, and in particular to mention the grounds upon which they have founded certain resolutions, which they hope the association may adopt as its own.

"Although the terms of our appointment might have justified a more general notice of the prevailing delusions and impostures of the day, we have thought it best to direct your attention solely to what is called homœopathy, as along with it are almost invariably associated some of the other fashionable systems of charlatanry. I am anxious to state, at the outset, that we have not thought it necessary to adopt the language of controversy; and that we have conceived the main duty of this body to be defensive, and not offensive. If there were no fear of quackery, in one of its most seductive and demoralising forms, creeping into our society, to spoil our social meetings, and canker the integrity of our professional intercourse with each other and with the public, it might be wrong to enter on this discussion; but when we see members of the medical profession fighting the battles of a mischievous charlatanry, under the banners of legitimate medicine, it is time for us to be stirring, lest these apostates, when actually sheltered by this association, damage its respectability, and perhaps ultimately endanger its very existence. Unlike the colleges, we have no royal charters upon which to rest in supine and dignified tranquillity; our only charter is the association of numbers, in defence of truth and high-toned professional honour. This charter—the best of all charters—it is our duty and our privilege to defend. We are not required, however, to make an aggression upon the allied armies of quackery; but the aspect of society and of the profession do loudly call on us to raise bulwarks and defences, sufficient to prevent this enemy from stealing a march upon us, and destroying our citadel ere even the cry of danger has been heard.

"Such, then, are the general principles which ought to guide us; and which, when applied to the actual relation of the profession to homœopathy, mark out the necessity of excluding from this association three classes of practitioners: first, those who really (and some of them honestly) practise homœopathy; second, those of a mixed or bastard breed, who practise homœopathy, in combination with mesmerism, hydropathy, allopathy, or any-pathy which the patient may fancy the most; and third, those who, under various pretences, hold professional intercourse with homœopathic practitioners.

"It would be an unseemly waste of time to prove before this assembly that homœopathy is a mere chimera—a system opposed to reason, common sense, and all medical experience; but I may be allowed to state in a few words what Hahnemannism is, and briefly to explain who are the incongruous crew who range themselves against us, under the flag of homœopathy.

"Three leading doctrines, or rather dogmas, were promulgated by the German dreamer. First, that all diseases depended upon three inherent taints, the principal one being

the itch, or psora, as he called it; second, that 'like cures like'—*similia similibus curantur*; and third, the giving of infinitesimal doses. It has been often and elaborately shown, that these dogmata—these chimeræ—have not only no scientific basis, but have neither facts nor even probabilities to rest upon. The statements made about medicines acting, when divided into the millionth or decillionth of a grain, are so transcendently nonsensical, as to be entertained, even as a subject of consideration for an instant, only by an unhealthy mind. The simple fact is this, that Hahnemann's doses cannot be demonstrated to exist, and are so small, that the mind of man can form no conception of their minuteness. Some homœopaths repudiate, in a sort of half-and-half way, the small doses; but the public, who fee homœopathic doctors, generally conceive that their medicines are given to them in the attenuations of Hahnemann, in quantities ranging from a millionth to a decillionth of a grain. 'Little pills' were yesterday lauded by a platform speaker at the homœopathic meeting in Freemasons' Tavern; but his laudations were perhaps applauded by men who give as freely, or more freely, than many of us would dare to do, strychnia, aconite, and other such like drugs, the most terrible doses of which may be administered in drops, and fractions of a grain. Large doses of our common medicines, as I well know, are also every day prescribed by men who come forward as candidates for homœopathic practice among the wealthy and the noble. 'Little pills' may be, but certainly a little quantity of physic is not, a criterion by which to know the practitioners who range themselves under the flag of homœopathy. Dr. Quin openly advised what I may term very large doses of camphor in cholera; and in my own experience, I have found that patients had been taking along with the globules (under the name of *adjuvants*) the same medicines and in the same doses which we employ, and which experience has sanctioned. What is now called homœopathic practice may, I aver, mean any kind of practice. I have said enough to show you how vain it is to define what is meant by homœopathic practice, when I mention that, at a recent meeting of the 'Annual Congress' of homœopaths, there was present, as a large participator in the business, Dr. William McDonald, who, besides being an homœopathic practitioner, is a leading man as a believer in and lecturer on the highest degrees of mesmerism. Then Dr. Macleod (whose autobiography I hold in my hand), the keeper of a water-cure inn at Benrhydding, in Yorkshire, is a chosen champion of homœopathy—a man whom the *Homœopathic Times* delights to honour, and who treats his patients by globules and wet sheets. Dr. Henderson, of Edinburgh, Dr. Calvert Holland, and Mr. Kingdon, of London, prescribe infinitesimal or ordinary doses, according to their own or their patients' fancy. I select these gentlemen as my examples because their acts are before the public in print. The medical creed of these practitioners it is impossible for us to comprehend. They are, however, a large and increasing class, and on that account they seem to claim especial attention in our report. It is, then, the opinion of the committee, that both the real homœopathic practitioners, and those who practise homœopathy in combination with other systems of treatment, ought not to be members of this association.

"But, besides the legitimate and the bastard homœopaths, there is another class of men who have no right to be associated with us in this society. Regarding this class I wish to say little, but that little must be plain, and it is this—that we must not—not one member of the association must for the future hold professional intercourse with those traitorous men who meet at the bedside with practitioners, whose medical creed and character I have (though perhaps too mildly) depicted. A broad line of demarcation must be drawn, and it must be done this day. Private friendships have perhaps made some of us too long in adopting the painful, but only right course. To error or imposture there never can be made an honourable concession. I would here remark, that no retrospective legislation is contemplated; nor is it proposed to enact new laws to-day. We only wish certain general principles to be sanctioned, as the basis upon which laws for the future governance of the association are to be framed, and afterwards submitted to the next annual meeting

for ratification. By adopting this course, the respectability of the association will be sufficiently guarded and maintained; and no one will be able to bring against it the charge of having acted precipitately, or under the influence of excitement.

"One of the most curious features of the homœopathic quackery is this—that while its professors vilify the science of medicines as we follow it, and abuse us through the press, the platform, and the pulpit, they yet eagerly seek their credentials from our colleges, and even try to enter our more private medical societies. This, however, must not be allowed; and it is incumbent upon us, as representing the medical practitioners of England, to tender hearty thanks to the Scottish colleges and universities, for refusing licences to practise, and academic degrees in medicine, to homœopathic practitioners.

"The mention of the pulpit brings to my recollection a topic which cannot be passed over, and which I approach with feelings of the deepest pain and sorrow. I will not yield to any man in my respect for the sacred office of the ministry; myself the son of a clergyman, I have always felt that the only other calling more noble than our own is that of preaching the everlasting gospel; but, when clergymen assail us from the pulpit, and injure our influence with our patients by their zeal in converting proselytes to Hahnemann, neither delicacy nor duty can justify our silence. Numerous facts have been laid before your committee, from which we have ascertained that, in some districts of the country, the zeal with which the clergy have taken up quackery knows no bounds, and many of our brethren have had their patients wiled away by clerical canvassing, to homœopathy, hydropathy, and mesmerism.

"I would not have ventured, however, to bring this prominently before you, did I not hold in my hand a sermon preached by a reverend vice-president of the Hahnemann Hospital, in Bloomsbury-square, from which it is necessary that I should read some extracts. The preacher was the Rev. Thomas R. Everest, rector of Wickwar. He selected his text from the gospel of St. Matthew: "And as ye go, preach, saying, the kingdom of Heaven is at hand; heal the sick, cleanse the lepers, raise the dead, cast out devils: freely ye have received, freely give."—Chap. x. 7, 8. In this text the reverend gentleman finds revealed the doctrine of Hahnemann. But I will give you his own explanation of the words of the evangelist.—'Heal the sick and cleanse the lepers? Cleanse the lepers? Why pick out disease at all from amongst all the ills of men? And, if so, why that particular one? Why not blindness, or madness, the stone, or the dropsy, rheumatism, or the gout?' The leprosy of St. Matthew and the psora of Hahnemann, are the same thing. That, in fact, is the grand idea of the sermon.

"This reverend vice-president of the Hahnemann Hospital broadly and plainly proclaimed from the pulpit of St. Augustine, Cheapside, that our Saviour's atoning sacrifice was scarcely available to a fallen man till Hahnemann appeared! Bear with me while I read a short passage to make good my assertion. It is almost too bad to read aloud; but I must do so, to save me from the charge of misrepresentation:—'At the fall of man sin entered into the soul, and disorder into the physical frame (with which that soul is connected) at the same moment. God sent His Son to repair the mischief, and he bade His ministers preach the gospel, and heal the sick; that is, cure the moral disorder and the physical disorder together; and for 1,900 years that precious wisdom has cried in the streets unheard. The preacher of the gospel, not aware that that gospel could never have free course until the physical leprosy of man was cleansed, and his chronic tendencies cured, has handed over to a separate profession the business with which his Lord entrusted him. And that profession, unconscious of its privileges, its duties, its powers, has, so to speak, ignored the whole question. It leaves those mad whom it might have cured, or it maddens men by large doses of powerful medicines; and then we wonder at the crimes and folly that mark the career of man. Let us be assured, brethren, that there is in the gospel of Jesus a life, a power, a spirit, which is so much in harmony with

man's happiness, and brings with it so much good, that if it had been understood by those who teach it, and had had fair play, it would long ago have altered the whole face of society. But in spite of Moses, in spite of Jesus, in spite of the law of nature, alike deaf to God's voice and blind to facts, the medical profession has left the leprosy of the flesh to entwine itself with the leprosy of the soul. Between the two, man's tendencies to sin are increased by the disorder of his reason, caused by the abnormal working of his machinery; and the gospel finds in that individual in whom God intended that all should be normal, but with whom it can only communicate by means of nerves in a chronic state of irritation, and a brain in discordant working, not a gentle convert, but a hardened criminal, a perverse unbeliever, a furious fanatic, or an eccentric, unreasoning lunatic. But old things are passed away, behold all things are new made unto us. Let us now see what the new system proposes to do for the human race.' That is to say, let us see how homœopathy is to render available the hitherto almost useless gospel of Jesus Christ—till Hahnemann appeared, unable to make head against 'large doses of powerful medicines.'

"The preacher traces all the diseases and vices of the human race to our 'frantic medicines,' and this he brings out in many parts of the sermon; and, as an example, I quote one paragraph—it is his appeal to the pockets of his audience on behalf of the Hahnemann Hospital:—

"'Mothers! do you wish to see your children washed clean of that leprous tendency to disease which fills our grave yards with sweet young flowers cut off untimely, and which, to those who survive, transmits a legacy of pain, sin, and sorrow? Then aid us! Fathers! do you wish to see your sons grow up faithful Christians, and sensible men, with a normal allowance of health, able to use calmly the reason which God has given to man for his comfort here, far from all extravagance and all eccentricity, holding a course of life steady, reasonable, religious—such a course as man, healed, God-fearing, and intellectual, should hold? Then aid us! Governors of God's heritage, monarchs, parliaments, magistrates! There is a gloomy thunder-cloud collecting on the horizon, rolling its deep masses over the face of day, threatening, lurid, portentous; but no man knows exactly of what. It is called Socialism, Communism, the Rights of Man, the Rights of Labour, the Red Republic. It is earnest, dark, sombre, avenging. It has been lashed up by hunger, low wages, glaring inequality, wicked passions of peoric origin, roused by alcohol and medicines, maddened by burning eloquence. It has no strain of gentleness in it. It is arrested by neither ridicule nor menace. There is not one smile or one jest hidden beneath its fantastic swirls. The sword has cleft it, but it re-unites more baleful than before. The cannon has poured its hail against it, but it rolls on as dense and as red as ever. The priest has cursed it; society trembles to hear of it; but there it hangs in the calm that precedes the earthquake; baffled, perhaps, but biding its time till the 'hour come, and the man.' Shall I teach you to draw the lightning quietly from it ere it bursts upon your throne and your altar, and piles all your institutions into one heap? Aid us!'

"I must still inflict two other extracts upon you; they give, more concisely than any other which I can select, the preacher's contrast between homœopathy (which he designates the 'good news of great joy') and our system of medicine, which he maintains to be the origin of 'gaols and gin-palaces; terrible crimes, for which scarcely the siege of Jerusalem could find a parallel; bands of prostitutes gathering round the dome of St. Paul's, &c., &c.' After pointing out that from the womb the infant must be prepared for heaven by means of globules, he thus announces the result of such treatment:—

"'The medicine of love has prepared the soil for the gospel of love. The seed of the word will soon strike root in such a soil, and bring forth much fruit; not the fruit of thievery and crime, afflicting folly and snarling religion, that exists at present, but a wholesome crop of sensible actions and sound opinions, ripened by the steady rays of reason and religion. Growing up thus amidst calm and sunshine, and

love and harmony, induced by the medicine of harmony, the education of the young candidate for heaven commences. The first care of the parents is, by proper dynamic medicines (for medicines in a brute, material state, having a totally different action on the human organism, are perfectly useless, or rather merely injurious), to eradicate all those psoric tendencies which cause or increase all our aches, pains, ill tempers, obstinacies, rebellions, cachexies, and all chronic diseases. Life in the beginning does so long for harmony, that, if thus gently aided, it soon overrides all discordant tendencies. The molecular attraction proceeds normally. The infant develops into a normal child of the normal type, in whom all tendencies to irregularity, whether of body or mind, growth or disposition, are much weakened and simplified. It has never been exacerbated by frantic doses of powerful medicines, never been excited by poisonous diet, never been beaten into obstinacy, never imitated the quarrels of its elders, never been spoiled into selfishness, never indulged into evil tempers; continuing the physical education, and watching carefully the cries which life utters for assistance, in order to relieve her just where and when she wants aid—never by mere palliatives, but always by dynamic remedies, whose energumenic power, akin to life itself, has been subtly awakened and called forth from the brute mass in which it lay slumbering, and, if well chosen, will, by its unflinching elective attraction, restore to life at the very spot, by the very nerve wherein it labours, the very force in which it is deficient—you commence the moral and religious training of the child. Plain, simple, easy, and charming, is the good news of great joy."

"So much for 'the medicine of love:' now let us hear one or two of his sentences regarding our system: "There was once a marriage made in heaven; but you put asunder those whom God joined together in heaven, when you separated the healing of the sick from the preaching of the gospel, and made two professions out of that which Jesus made one; and therefore it is that the art of cure, separated from the holy principles of love, has lost its way and fallen into foul company, and consorted with all unloveable things—cathartics, moxa, the lancet, emetics, and blisters. And therefore, too, the gospel, parted from its earthly yoke-fellow, and preached by those who share in the sickness and leprosy of the race, has succeeded so partially, and brought forth the harvest of contradictions that you see in the Christian world."

"Now, sir, you have perhaps had more than enough of homœopathic divinity, but I was anxious to let the preacher speak for himself. Remember that Mr. Everest is vice-president of the Hahnemann Hospital—that the sermon was preached in aid of that establishment, which is under the immediate patronage of much of the wealth and aristocracy of this country. Advertised upon this sermon we find, as hospital officebearers (along with the name of the preacher), his Excellency Chevalier Bunsen, his Grace the Duke of Hamilton, the Earl of Wilton, the Earl of Shrewsbury, Lord Robt. Grosvenor, M. P., and many others, prominent in society both for rank and riches. To such lists we are generally referred triumphantly; and I admit that it would not be difficult to add to them the names of several members of Parliament, noblemen, bishops, and, at least, one archbishop—Dr. Whately; but alas! has not the train of St. John Long, and many other noisome London quacks, been swelled by a similar throng of noble and reverend personages? Might not the same authorities be cited on behalf of the flimsy impostures of the present idol of fashionable fools, Mademoiselle Julie? Medicine cannot be acquired in leisure hours; it must be learned by patient and painful study at the bedside and in the closet; and I have therefore yet to learn that statesmen and archbishops, even though they be good men, are authorities in matters of medical experience. Not all the coronets and mitres in England can give dignity to error, or transform a lie into the truth; and, layman though I be, I hesitate not to proclaim in this public Christian assembly, that the sermon from which I have quoted is replete with quackery, heresy, and impious doctrine.

"There is one other point in our report which requires

notice, and it is a recommendation to give great publicity to our determination not to have any kind of professional intercourse with homœopathic practitioners. It is necessary that the public be told authoritatively, and through the usual channels of information, that they must select; that as for us, we positively refuse, under any pretext whatever, to hold professional intercourse with such persons; that with them we have no principles in common, and that, therefore, to take fees for meeting with them would be something worse than degrading—it would be appropriating money under false pretences: for a consultation without common principles would be a mere sham—it would be no consultation at all. It is in this way that the public will be led to inquire into what homœopathy is; for I feel persuaded that not one in a thousand of its dupes have the slightest conception of the vastness of its absurdity, and the Protean wiles with which, setting honesty, consistency, and common sense at defiance, it bewitches the sick and the silly."

Dr. Cowan, of Reading, said, at a further stage of the proceedings:—

"I am not a raw recruit in the anti-quackery ranks, having for many years done my utmost to expose and denounce the numerous delusions of the day, especially those affecting our own noble science. I am rejoiced to see the hearty and healthful tone of feeling with which the report has been received; for it appears to me most proper and most important for this association to take the present opportunity of pronouncing its formal and its unanimous rejection of homœopathy. The increase of homœopathy I look upon with a very grave view, I regard it as one of those portentous moral phenomena which are stealing over the age. It is not the practice of medicine only that is at stake, it is the practice of sound thinking. When we supplant by mushroom theories truths which have hitherto occupied the minds of men, and been tested and confirmed by the experience of ages, when we bring into existence new phantasies of the human mind, and give them the outward formality of facts, we surrender the stability of our judgment, and depart from all soundness of thinking. With us, as medical practitioners, the rejection of homœopathy is a question of principle, not of doses, a question of morals and not of etiquette.

"The man who believes in homœopathy is a mystic; his creed is at variance with all rational experience, and subversive of all previously acquired knowledge. He has lost the ballast of his reasoning faculties, and set at defiance all those means by which the human mind is regulated. I distrust his judgment upon every subject. Belief in homœopathy is but the symptom of a mind without stay or ballast, liable to be driven hopelessly into every folly, ever ready to spurn to-day what it yesterday believed. Hahnemann, the founder of homœopathy, was an enthusiastic visionary, who preferred the amorphous products of an inflated self-esteem and an extravagant fancy to those slowly-growing and ever-deepening truths which ages had accumulated, and the wisdom of the wisest and the best of men had augmented and confirmed. If homœopathy be true, then are we all believing a lie, as all our forefathers have done; but if it be utterly baseless and false, as in my inmost soul I feel it to be, it can only be regarded as a deadly parasite upon rational medicine, which ought to be boldly excised, and cast aside by every sound-thinking mind.

"This is an age of moral and intellectual anomalies, not n physic only, but also in divinity. We have amongst us the monstrosity of Romish doctrines being consistent with Protestant preferment, and the equally anomalous paradox of men educated as members of our honourable profession availing themselves of their titles and degrees, while adopting and practising opinions which, if previously avowed, would for ever have excluded them from their present qualifications. Were a homœopathist a consistent and honest man, he would at once dissociate himself from a school whose best philosophy he proclaims to be a lie, and spurn a diploma which only pledges him to error. To eject homœopathic practitioners from our ranks, and exclude them from professional fellowship, is no act of tyrannous intolerance or bigotry, but a necessary measure of self-respect and self-defence, a consistent testimony to the principles we profess,

the only method of extricating truth from apparent alliance with what we unhesitatingly assert to be a folly in philosophy and a dangerous delusion in practice.

"In discussing homoeopathy I do not attempt its refutation by merely pointing out its arithmetical absurdities and physical impossibilities; but I banish it at once beyond the pale of discussion, and class it amongst the fallacies too extreme for investigation. If a man say to me, 'Two and two make *five*,' I do not speak to him twice—the man is *gone*. And if a man profess to me his belief in homoeopathy, I am apart from him for ever. He admits as facts things at variance with rational experience, and in these circumstances I must stand aloof from him.

"I believe homoeopathy, in its very nature, as a therapeutical system, to be incapable of experimental demonstration, because the agent employed is subdivided infinitely beyond the means of chemical analysis, and, therefore, the fact of its existence can never be substantiated.

"We have read of mental epidemics in the middle ages, but we are apt to forget how extensively they prevail in our own. In the midst of such restless excitement, such morbid extravagance, to adhere to the 'old paths,' and to sobriety of judgment, is no easy task. To be for ever seeking first principles, and to be without a standard within, by which new pretensions can be tested, is the condition of multitudes of all classes among whom we live; it is one of the most dangerous characters of an age of overheated intellectualism. We rush wildly forth upon the field of experiment, mistake our fancies for facts, our expectations for principles; and are soon hopelessly enrolled in the rapidly swelling ranks of the deluded and deluding.

"But I must not farther enlarge. Let me only say in conclusion, that to me our present duty seems very plain; it is to repudiate principles at variance with an honourable and a scientific profession. Whether as an association we perish or survive, let us nail our colours to the mast, and sink or swim in the good old ship of Rational Medicine."

SPECIFICATIONS OF CHEMICAL PATENTS.

Benson Stones, of Warwick-street, Golden-square, in the county of Middlesex, for improvements in the use and treatment of peat and its products, and other carbonaceous matters; and also for apparatus applicable to such and other chemical purposes. Patent dated April 15, 1851. Enrolled October 15, 1851.

The first improvements contained in this specification relate to a mode of charring or distilling peat, wood, or tanners' bark and coal together, whether for the purpose of making a peculiar sort of coke, or for the twofold purpose of producing gas, and making the coke alluded to. To accomplish this, the patentee forms a mixture of about equal parts of powdered peat and coal dust, by means of the churn hereinafter described, and carbonizes it in retorts, by which means a more dense and compact coke is obtained than that furnished by peat alone, unless it had previously undergone the process of mechanical pressure. If it be considered desirable to collect the gas produced in the above process, the patentee passes it, in some instances, through retorts filled with incandescent charred peat, in order to improve its quality. He also employs the agency of mechanical pressure on the coke whilst in the state of preparation in the retort, in order to obtain it of greater density and compactness.

The patentee claims the charring of peat, wood, or tanners' bark and coal together, whether for the twofold purpose of producing gas, and making such a description of coke, or for the sole purpose of making the coke.

The second part of the patentee's improvements relates to the application of the greases and resino-adipose wax obtained from peat by distillation to certain new purposes. The preparation of these greases was patented by Mr. Stones, September 7, 1850, and the terms adipolein and adiposole are applied to them. The object of this part of the specification is to apply these greases to the currying of leather. By redistilling the adiposole, an oily liquid and a residuum,

termed peacerine, are obtained, the latter of which furnishes a very fine black polish when slightly spread upon leather and well rubbed. The greases may also be mixed with wax and gutta percha (the latter being previously dissolved in bi-sulphuret of carbon), and powdered turf, cork, waste wool, or cotton rags mixed therewith; the composition thus formed is then passed whilst warm under rollers, whereby sheets of any required thickness are obtained, which may be applied to various useful purposes.

The patentee claims the application of the greases and resino-adipose wax obtained from peat, and herein denominated peacerine, adiposole, and adipolein, for currying and polishing leather, and also for strengthening it, and rendering it or any other material waterproof, and the various other uses herein described and alluded to.

The patentee's third improvement relates to the manufacture of peat, turf, humus, and other vegetable matter, into manure. For this purpose he combines urine, blood, ammoniacal liquors, &c., with finely pulverised peat or turf, together with such other substances as, from the nature of the soil or the constitution of the plant, may be considered useful; the combination of these various ingredients being effected by means of the churn hereinafter mentioned. This manure is to be applied in the usual manner; or the seed to be sown, having been first covered with some substance of an adhesive nature, is coated with the manure, so that each grain is surrounded with the manure useful to the future development of the plant. The phosphate and super-phosphate of lime, solution of bones in acid, nitrate and sulphate of soda, and silicate of potash, are amongst the mineral constituents of this manure.

Coaldust or ashes, sand, burnt clay in powder, peataah, shellash, coprotites, shells, and other organic and inorganic substances, may also be added in a pulverized or disintegrated state, with the view of making the soil friable, and rendering it more accessible to air and moisture. The patentee also prepares humic or peat acid, by boiling peat with solution of caustic potash, and precipitating by means of sulphuric acid. This preparation he mixes with the other ingredients in the formation of the manure, also coal oil, shell oil, or other strong smelling substances of like nature, to protect the seed of plants from the ravages of insects.

The patentee claims the use of peat, turf, humus, or other decomposed or partially decomposed matter, to be applied by attaching it to the seed, grain, bulb, or root, &c., either alone, or with other matter or ingredients, and reduced to a powdered state from the purpose, and so prepared for the purposes of manuring generally, whether to be used alone or in combination with other fertilizing matters or substances as described, and so as to form a manure, resembling farm-yard manure, in a concentrated and condensed state only, or the like manure, with the addition of other matters and inorganic substances combined, so as to give it the twofold character of an organic and a mineral and mechanical manure at the same time, and otherwise prepared or modified, as shown or alluded to in the foregoing specification.

The fourth improvement contained in this specification has reference to improvements in apparatus already patented (Sept. 7, 1850) to assist in the treatments and manufacture of various substances mentioned in the preceding parts of the specification, and for other useful purposes. The patentee states that the main object of this apparatus is to furnish the means of treating certain substances in a fused state, when requisite, and to allow of the vapours that may be at the same time generated in it either to be carried off for condensation and collection, or otherwise; and also of treating matters therein contained with a constant supply of vapour, gas, or air, as the case may require; and again, of treating gases with any ingredient or solution as may be deemed desirable. Substances varying in their specific gravities, as, for instance, oil and sulphuric acid, may be brought into more favourable states of action by means of this apparatus than can be effected by any other mode of operating. The axle of this "churn" is made to remain in a fixed position, in the same way as the axle of a carriage, and the churn to turn upon it; it is pierced horizontally at both

ends, to a certain distance, so that the steam, vapour, or gas, can be forced into the churn at one end of the axle, and carried off through the other end for collection or discharge, &c., after having acted upon the contents of the churn, which is kept turning at a rate necessary to maintain the whole contents in violent action. In the case of treating gases, these are, at a sufficient pressure, made to pass through the churn, which is kept in motion, and after a forced contact with its contents, whether lime in powder, or any other matter in a divided state, or solutions of any substance, &c., carried away to be dealt with as desired. If the material to be treated be of a nature which requires that it should be fused or melted by heat, in order to treat it in a liquefied state, fire may be placed under the churn, or the churn may be worked in a chamber, heated to such a temperature as will keep the material in a state of fusion. The churn may be made of wood, wood lined with metal, enamelled metal, glass, or any composition or material appropriate to the peculiar nature of the substance, in the treatment of which the churn may be employed.

The patentee claims the system of apparatus described for mixing, digesting, bleaching, washing, purifying, and otherwise chemically treating matters, fluids, and gases, as alluded to in the foregoing specification, and its appliance to various other useful purposes.

TO THE EDITOR OF THE CHEMICAL RECORD.

Sir,—As you are publishing from time to time the admirable articles on agricultural chemistry by M. Joigneaux, perhaps the following statement of the means by which the potato was established in France will be interesting.

I am, dear Sir,

A CONSTANT READER.

The potato is indigenous to America, where, from Carolina to Valparaiso, it still grows wild. About the year 1630, it was carried from Peru into Spain, and from Spain to the gardens of Italy, Germany, and Flanders, in which latter place more importance was attached to its rarity than to its alimentary value; but in 1688, an inhabitant of Arras directed the attention of cultivators for the first time to the potato as an article of food. The appeal was not heeded, farmers being impressed with a notion that a sound opinion on a matter of agriculture could not emanate from a townsman, and moreover not liking innovations, they neglected to avail themselves of the advantage derivable from the cultivation of this plant. In 1692, Gaspard Bauhin again directed attention to the potato, and after great trouble succeeded in the introduction of certain plants in the environs of Lyons, and in the mountains of Vosges. These trials made on a small scale were very satisfactory, and there can be no doubt but that agriculturists, convinced of the value of the potato, would have extended its culture, had not popular ignorance spread the rumour, that the potato was a dangerous aliment, which if eaten would generate leprosy. This rumour proved sufficient to stop all further cultivation; forthwith, the potato was denounced without pity, and for more than one century this vegetable remained a subject of ridicule and absurd remarks. Philosophers even were not wanting to advance the proposition, that the tubers of this plant contained a poison incomparably more to be dreaded than the poison of other solanaceæ. People did not give themselves the trouble to calmly weigh evidence; and the masses, thinking a design to be directed against their lives, began to entertain a most unreasonable prejudice against a vegetable which was destined eventually to constitute so large a portion of their aliment. However, certain proprietors, more free than the rest from prejudice and the trammels of routine, continued to grow the potato for their own private use, and about the year 1763 it appeared pretty generally on their tables.

Twenty years afterwards, a man of genius, and possessing an iron will,—the illustrious Parmentier,—being very desirous of extending the cultivation of the potato in France, did not hesitate to expose himself to a torrent of railery, abuse, nay, even calumny, in the prosecution of his object. Parmentier, taking advantage of the weak points of mankind, had recourse to various tricks of innocent

charlatany. He commenced by inviting his friends to a potato dinner. Potatoes—nothing but potatoes—in every variety of form, appeared on the table, the dishes being rendered attractive by such winning devices of French cookery as the monotonous fare would admit of. The guests ate their fill, went away, and were none the worse for their potato meal. Thus, Parmentier gained his first great step; this was the commencement of his victory, but it was not yet quite complete; he had still to triumph over popular obstinacy and popular prejudice, and in this instance the genius of Parmentier shone forth. Adopting the motto of the end justifying the means, Parmentier now played the part of a veritable charlatan. Eve ate the apple, he said to himself, because she was told not to eat it, and I will forbid people to eat my potatoes. No sooner did this bright idea occur to his mind, than the philosopher planted a considerable breadth of potatoes at Montreuil, in the neighbourhood of Paris, and, when at length his crop ripened, he obtained from the Government a great number of soldiers, whom he distributed, sentinel fashion, at short distances one from another, all around the plantation. The fame of potatoes looked up from that day; people could not tell why soldiers were sent to guard them; there must be some occult virtue in them, people thought, and they forthwith dared to break through the barred ranks, and steal the precious tubers. There was no longer fear of leprosy; stolen potatoes were found to be very good, although potatoes, honestly acquired, were spurned and feared. Parmentier affected to be all indignation; he appealed to the laws, and claimed enormous damages, thus proclaiming the value of the crop; meantime his potatoes continued to be stolen, and were hidden like so many pieces of gold, only to be planted with greater care than ever. The highest people in France dined off potatoes, which now became no less esteemed than they were formerly despised; people acknowledged their error, and Parmentier's heart beat quick, and his bosom heaved with triumphant exultation.

The achievement took place just when it was most required, and its completion was advanced by a calamity. In the year 1785 the harvest failed; the corn crop scarcely amounted to one-third of the average yield, and the potato lent its valuable sustenance to those who had been wise enough to attend to its cultivation. This kind of practical logic was irresistible; popular indifference with regard to the potato culture altogether disappeared; and the rapidity with which its propagation was now conducted may be learned by the fact, that in the year 1793 scarcely 35,000 hectares were under potato culture, whilst in 1816 there were 349,904 hectares thus situated, and at present the number of hectares devoted to potato culture is somewhat above a million.

The mere indication of this progress is a eulogy on the virtues of the potato, and the eulogy is perfectly well merited, for very few crops of the earth yield so large and so numerous an amount of products as does the potato. Not only do its tubers constitute an agreeable and healthy food, but every other part of the vegetable has its uses. The stalks reduced to ashes furnish a large amount of potash, and therefore constitute a good manure. The flowers yield a fine yellow colour employed in dyeing, and its leaves, after maceration in water, or exposure to frost and snow, yield a fibre valuable in the manufacture of certain kinds of paper. Then again, by the application of chemical science, potatoes may be made to yield brandy, starch, sugar, size, and even when putrid and spoilt, according to the ordinary expression, they still are valuable as a manure. Who, then, with these facts made evident before him, will be so unjust as to refuse homage to Parmentier?

TO THE EDITOR OF THE CHEMICAL RECORD.

Sir,—Having been a subscriber to your excellent journal ever since its commencement, I trust you will receive in good part the suggestions that I shall make in this letter.

I need not be assured, sir, that your intentions were of the best kind in determining that a price current of drugs should constitute a leading feature of your journal; and I need not be informed that the particulars of this price current have

been correct. Intimate acquaintance with the drug sales enables me to speak authoritatively on this point. It is with regret and much indignation, then, that I have heard certain persons, interested in perpetuating an ignorance of the wholesale price of drugs, unblushingly pronounce your quotations as incorrect. The motives of these persons are so evident that they require no comment at my hands; but their effect is the same to retard the extension of a journal, which should, if the talent with which it is conducted had due influence, be the universal organ of the pharmaceutical body.

Whilst testifying, then, from my own knowledge to the correctness of your quotations of the wholesale price of drugs, I will take the liberty of suggesting that the price current be discontinued, and its place supplied by current matter of similar interest to that wherewith the remainder of the *CHEMICAL RECORD* is filled. After all, it concerns the retail chemists much less than might be imagined to know the wholesale price of drugs, of which the supply must be always obtained through wholesale houses; and what with credit, small purchases, &c., the sum paid by the retail dealer must always bear a very remote relation to their cost from the wharf. Such, then, sir, is my suggestion. I am convinced that its adoption would alike benefit the chemists and druggists and the proprietor of the *RECORD*, and the cause of antagonism now manifested by certain interested parties would be removed.

NEMO.

TO THE EDITOR OF THE CHEMICAL RECORD.

Sir,—In common with every reader, I presume, of your ably conducted journal, I have been delighted with the honest onslaught you have made upon the ranks of the homœopathic empirics. Whilst other journalists have given way to unreasoning anger in reprehending the empirical followers of Hahnemann, you have calmly attacked the delusion through the portals of chemistry, by the weapon of powerful argument, based upon facts admitted by the homœopaths themselves. Your demonstration of the necessary admixture of silica with every medicine that has been submitted to trituration is sufficient to demolish every belief in homœopathy that is not based upon unreasoning fanaticism—sufficient to prove the utter impossibility of fulfilling the condition of the postulate of Hahnemann, of administering medicaments unmixt.

It is impossible to conceive a stronger line of demonstration than the one you have taken; but, sir, it is one that must necessarily be addressed to the reasoning and philosophic—a class which, unfortunately, is not very large. At least, in most cases, we find the bulk of mankind to be more easily convinced by arguments addressed to their interest than to their reason; and I will propose to you a very powerful line of attack on homœopathy, based upon the pecuniary interest of members of the drug trade. For the sake of taking an extreme case, let us assume, sir, the practice of globulism to become universal. Let me ask, sir, in what condition would be the sale of drugs? Even now the dispensing business is sensibly affected, and it diminishes every day.

In one of your numbers, a few weeks ago, you made known the fact, that the chief globulistic compounder, a homœopathic chemist, as he calls himself, so far from being a man whose previous education was likely to have imparted delicacy of manipulation, such as the Hahnemannian votaries affect, commenced his career as an advertisement agent. Now, sir, do you believe such a person is competent to weigh out and mingle with all the accuracy required even in ordinary analysis? If not, how is he to conscientiously acquit himself of the requirements of globulistic pharmacy? Would it not be well, sir, for some leading organ of the press, like yourself, to boldly ask the question of these Hahnemannian chemists, by what means they affect their delicate weighings; in what kind of mortars they make their triturations; who makes their apparatus? Surely so reasonable a question must elicit a reply—nay, more, if they be honest men, they will not only furnish the reply, but solicit your inspection of their laboratory. To refuse would afford very strong presumptive evidence of their thorough dishonesty. I enclose my card, and remain, &c.

INQUIRER.

TO THE EDITOR OF THE CHEMICAL RECORD.

SIR,—From a perusal of the letters signed M. P. S. and G. W., in the last and previous numbers of your journal, I find a strong suspicion which I had formerly entertained, and which was the cause of my secession from the Pharmaceutical Society, thoroughly corroborated. This suspicion was that a few farseeing and designing men had laboured much to establish this society under the pretence of conferring a boon upon the druggists of this country, when their real object, as experience has shown, was to obtain for themselves public notoriety, and an appropriation in various shapes of the funds of the society. I regret deeply that I should from great vexation, caused as above recited, have retired therefrom, instead of having exerted my humble abilities to have assisted in reforming their abuses, as I understand some of the most talented and energetic members of that society are doing.

I perfectly agree with W. G. that the conferring of such a multitude of offices on Mr. Redwood is a monstrous wrong done to the interests and the reputation of the society. When we reflect how many men of genius there are with a thorough knowledge of chemistry who would gladly accept office under that society for one moiety of the sum paid to Mr. Redwood, it seems to me to be iniquitous that a man who never has and never can—add (from a lack of that precious gift genius, as the transactions of the society will prove) one iota to extend the boundaries of the science which he professes to teach, should have monopolized all its scientific patronage. Moreover, so secure does he feel himself on the proud pinnacle on which his connections have elevated him, that his manners have become as haughty as his former pretensions and position were humble.

In fact, I am informed on an authority on which I can rely, that, however haughty and uncourtous he may be to the members in general, he plays the toady most successfully to his patrons and his pupils. The deep game he is playing will ultimately be his ruin; for sooner or later his thirst for pay, and his enmity to those who could in justice to the society interfere therewith, will create such a scrutiny into his pretensions and his pay, that he will have to seek a livelihood by some other less audacious and less profitable occupation.

To put the members on their guard as to who are the wolves in sheep's clothing connected with their society, it may be prudent to indicate their names, which I have received on unquestionable authority and the best evidence. Mark their illustrious cognomens; Bell, Redwood, Morson, and Pereira. There are a few other worthies who play second fiddle to the above talented gentlemen; but it is not necessary at present to name them, as it is only needful to break up this clique (who are bound together by the strongest of human ties, viz., interest, vulgarly bell metal) to scatter these latter to the winds.

Yours, obediently,

A SECEDER.

TO THE EDITOR OF THE CHEMICAL RECORD.

SIR,—Having observed in the last number of the *CHEMICAL RECORD* a letter from an ex-member of the council of the Pharmaceutical Society, in which he broadly asserts that the members of the council are nominees of Mr. Bell, I beg to state that, from personal acquaintance with some of the present members of the council, I can safely say that all do not consider themselves privileged to sit at that board by the condescension of that gentleman: in truth, I am led to believe that they rather plume themselves upon an independent position in that respect; but from facts that have recently come to my knowledge, I must confess that, if they persist in opposing the views and interests of the snug family party that has too long held power there, they will do well to retire at the expiration of their term of office, and not risk the chance of a humiliating defeat at another election. "Fools rush in where wise men fear to tread."

I regret to see the discourtesy with which your reporter has been treated, and am inclined to think that it has arisen from an error of judgment on the part of the official with whom he came in contact; I cannot bring myself to credit

that the most packed council can have sanctioned such a proceeding. This much I do know, that such a course does not, by any means at all, accord with the wishes of the members at large; as almost, in fact I may venture to say, a unanimous desire prevails that the lectures delivered at the rooms of the society should be published. I certainly agree with you that a monthly periodical is not so suited to convey them to the public as one published more frequently. I do hope to hear of a reversion of this decision respecting your reporter, and so at least remove this additional stigma from the fame of a society which already has sins sufficient to answer for. The chemists and druggists, if really in earnest for the reformation of a society which in itself contains much that is good, and is well calculated to protect and improve the practice of pharmacy, will best evince their desire by giving that support to the *CHEMICAL RECORD* which will place it above any sinister influence, which, I fear, for the respectability of the society, has been but too unblushingly practised by a member of council elsewhere. I inclose my card; but, for obvious reasons, it will not be necessary to append my name to this letter.

I am, your obedient servant,

DELTA.

OUR GLEANINGS.

Day by day fresh applications occur of that most valuable fluid, chloroform. Dr. Bagot has administered it with great success in the treatment of gout in the stomach. In a case described by that physician, in a paper read before the Surgical Society of Ireland, the patient subjected to this mode of treatment was lying on his left side, with his knees drawn up, suffering from pain referred to the epigastrium and cardiac region. There was great tenderness on pressure over the seat of the pain, also considerable hardness, exactly corresponding to the position of the stomach; the intense agony under which he laboured was of the true spasmodic character met with in cases of gout attacking this organ, a certain amount of pain being constant, with a violent spasm recurring at short intervals. He had frequent vomiting, also several attacks of chill, none of which amounted to a rigor, and he also complained of slight cramps in the hands and legs. He was restless, with cold surface; pulse 60, small and weak; tongue clean, and perfectly cold. He had been confined to bed the previous day with gout in his knee; his suffering had not been very severe, and he had, at eleven o'clock at night, partaken of a red herring and a glass of hot punch, after which he had fallen into a sound sleep, which continued up to six in the morning. At that hour he awoke in violent agony, and immediately discharged the contents of his stomach, the pain in the knee-joint having entirely disappeared. Dr. Bagot saw him at nine a.m., three hours from the commencement of the attack, at which time it would be difficult to imagine anything more unpromising than his case.

Dr. Bagot covered the abdomen with sinapisms, and had his legs and feet rolled up in large pieces of flannel wrung out of hot water, containing a quantity of mustard and salt, which were frequently renewed. He immediately administered eighty drops of tincture of opium, with a drachm of ether; but not finding the slightest relief afforded by the laudanum, he substituted chloroform in combination with the ether. He considered that the terchloride of formyle would have an advantage, from its being not only anti-spasmodic, but also stimulating and diaphoretic. The most marked relief followed its exhibition. For three hours this mode of treatment was followed, at the end of which time signs of reaction appeared. The dose of ether having been from half a drachm to a drachm, and that of chloroform from twelve to eighteen drops, a close approximation to the entire quantity of each would be 3x of ether and 2vij of chloroform. During this time his thirst was very great, and he took frequent draughts of cold water, which seemed to accumulate in his stomach, and be thrown off at intervals, this vomiting not being attended with either an increase or diminution of the pain, and not followed by any particular exhaustion. As soon as reaction had fairly set in, he administered two

terebinthinate enemata, which came away without any faeces. At three o'clock reaction, which had been very slow, was fully established, his body having become warm, and his tongue much nearer to a natural temperature, though yet rather cool. The pain in the stomach was much relieved, but the vomiting was now more troublesome, and his thirst very great; he was also much annoyed by windy eructations; the hardness in the region of the stomach was persistent; pulse fuller. A grain of calomel, rubbed up with a little white sugar, was now given every half hour. At six o'clock, the vomiting had in a great measure subsided, a little warm whey having remained in his stomach. He was also freer from pain than he had been at three p.m.; pulse as before, 60 in a minute, and fuller. The calomel was continued, at intervals of three hours; and sinapiam was applied on the epigastrium, and his feet kept hot through the night. He gradually recovered, the gout appearing again in the same knee next day but one, where it continued to give considerable pain for about thirty hours. A little dull pain continued for a day or two in the epigastrium, but the hardness remained for some time, and disappeared very gradually.

Guernsey having given birth to one of our most notorious homoeopathic practitioners, who changed his system from honourable to dishonourable practice, for interested reasons as we have already pointed out, it is satisfactory to find the medical practitioners of that island coming forward strong in their repudiation of this form of delusion and dishonesty. The following letter has been addressed to the committee on irregular practice of the Provincial Medical and Surgical Association, by the gentlemen whose names are appended:—"Gentlemen,—We, the undersigned medical practitioners of the island of Guernsey, beg to offer our warm congratulations and sincere thanks to the Provincial Medical and Surgical Association in general, and to you, as their committee, in particular, for the manly and straightforward resolutions unanimously adopted at a meeting of that body held at Brighton on the 14th ult. We likewise desire to express our cordial approval of the uncompromising tone of the speeches delivered on that occasion, when, in our humble opinion, the principles of truth, honesty, and morality, were enunciated, the science of medicine vindicated, and the injurious tendency of homoeopathy—its hollowness, absurdity, and dishonesty—demonstrated by clear, comprehensive, and irrefragable facts. We would fain hope that the dignified manner in which the association has responded to the movement of the Universities of Edinburgh and St. Andrew's, to expose and discard homoeopaths, will be followed by the English and Irish colleges, and thus enable the United Kingdom to set as bright an example in checking error and upholding truth in medicine, as it has recently done in religion. We derive additional satisfaction in addressing the Provincial Medical and Surgical Association, from having throughout firmly, advisedly, and conscientiously resisted all attempts to induce us to hold intercourse with homoeopathic practitioners, or to countenance a system, the offspring of quackery, the refuge of imposture, and the nursing of dupes. We now calmly await the course of events, satisfied that truth and honesty will prevail, and that homoeopaths, who seek to be considered as regular practitioners, and pertinaciously shelter themselves under the aegis of medical institutions, will ultimately be exposed and repudiated. We have the honour to be, gentlemen, your obedient servants,

"JOHN MAUGER, M.R.C.S. Eng., S. ELLIOTT HOSKINS, M.D., F.R.S., N. MAGRATH, M.R.C.S., R.N., DE BRAUVOIR DE LISLE, M.D., THOMAS L. MANSELL, A.B., M.D., JOHN ROBERTS, M.R.C.S. Eng., R. G. CAREY, M.D., FRED. C. LUKIS, M.R.C.S. Eng., M.D., M. A. BAZILLÉ CORBIN, M.R.C.S. Eng., B. COLLENETTE, M.R.C.S. Eng., MARTIN MAUGER, M.R.C.S. Eng., POLYDORN TRANTER, M.R.C.S. Eng., J. BAINES, M.R.C.S. Eng."

PUBLIC SALES OF DRUGS.

October 16.—By C. L. JENKIN.—8 serons Crown and Grey Bark, 1s. 2d., bought in; 8 serons Maracaibo Bark, 8d.,

bought in; 6 bales Jalap, 2s. 5d. to 2s. 6d., out; 7 bags Colombo Root, 15s., bought in; 3 barrels Gum Arabic, 28s., out; 8 barrels 9 casks Camomile Flowers, 59s., 60s., to 74s., out; 1 cask Ergot Rye, 1s. 2d., bought in; 4 cases Lavender Oil, 2s. 2d. to 4s. 2d., bought in; 1 case Oil Rosemary, 1s. 2d., out; 3 cases Oil Thyme, 1s. 2d. to 2s. 2d., bought in; 69 bags Cummin Seeds, 34s. to 36s., sold; 3 chests Shellac, 50s., sold; 24 boxes Vanillas, 5s.; 7 packages Beeswax £5. 2s. 6d. to £6. 10s.; 1 case Colocynth, 1s.

By THOMAS MERRY and SON.—19 caddies Tonquin Musk, 18s. 6d. to 28s., sold; 6 tins Coussa, 4s., out; 125 serons Yellow Bark, 5s., out, 1s. to 2s. 6d., sold; 8 serons 2 boxes Crown Bark, out; 14 bales Simarouba Bark, 9½d. to 10d., sold; 24 cases Damar, 42s., out; 16 bales Worm Seed, out; 64 cases Castor Oil, good seconds, 4d.; 3 cases Oil Rosemary, 2s. 4d.; 238 gourds Barbadoes Aloe, 59s. to 63s., sold; 18 bags 1 barrel Gum Copal, 27s. to 38s. 6d.; 2 cases Flat Rhubarb, 1s. 8d.; 9 packages Gum Guaiacum, 11d. to 1s.; 10 cases Gum Animi, 19s. 6d.; 25 chests Rhubarb, round, 1s. 2d. to 1s. 3d., flat 1s. 6d. to 1s. 6d., sold; 14 cases Grey Bark, 2s.; 80 bags Galangal Root, 20s. to 20s. 6d.; 9 breakers Cochon Cocoa Nut Oil, 34s.; 3 hogsheads Ceylon Cocoa Nut Oil, 32s.; 5 bags Calamus Root, 22s.; 6 bales Sarsaparilla, 1s. 2d., damaged; 61 bags Fenugreek Seeds, 10s.; 1 bag Gum Animi, 21s.; 2 chests Gum Olibanum, 11s.; 3 cases 2 tins Oil Aniseed, out; 2 casks Brown Barbary Gum, 40s.

By LEWIS AND PRAT.—2 chests Gum Animi, £2. 15s. to £9; 97 chests Gum Arabic, 20s. to 55s., sold; 114 boxes Gum Kino, out; 29 chests and 24 bags Cardamoms, 1s. 4½d. to 2s. 10d., part sold; 21 serons Flat Yellow Bark, 4s. 9d., out; 86 bundles Cassia Fistula, 20s., out; 21 cases Castor Oil, 2½d. to 4d.; 407 bottles Cajaputa Oil, out; 5 cases Citronelle Oil, 3½d. to 5d.; 7 cases Vegetable Oil, out; 38 kegs Tamarinds, 26s. to 28s.; 13 packages Beeswax, £6. 17s. 6d. to £17. 10s.; 8 kegs Jamaica Honey, 43s. to 44s. 6d.; 2 packages Brasil Isinglass, 1s. 6d. to 1s. 9d.; 56 bags Colombo Root, 30s. to 74s.; 4 chests Cape Aloe, out; 19 boxes Vermilion, 4s. to 4s. 8d.; 5 chests Star Aniseed, 75s., sold; 16 chests Seedlac, out; 7 packages Cowage, 3s. to 3s. 6d.; 7 casks Colocynth, 1s.; 340 pockets Turmeric, 11s. to 15s., sold; 261 bags Myrabolanes, 7s. to 7s. 6d., sold; 18 bales Madder Roots, 34s., sold; 38 casks and 59 boxes Plumbago, 5s. 6d. to 12s.; 359 chests Rhubarb, 1s. 4d. to 1s. 10d., sold; 102 chests Gum Olibanum, 8s. to 47s., sold; 20 chests Assafetida, out; 4 chests Gum Benjamin, out; 8 chests Gum Myrrh, £2. 8s. to £5; 64 boxes Gum Damur, 44s. 6d. to 46s.

ELLIS & HALE.—101 chests China Rhubarb, 1s. 5d. to 1s. 6d., sold, 2s., out; 7 chests Fine Gum Myrrh, £1. 12s. 6d. to £9. 10s.; 8 chests Gum Arabic, 67s., out; 17 casks Gum Sandrac, 60s., out, 26s., sold; 2 cases Colocynth, damaged, 6d., out; 6 chests Cowage, 4s., out; 5 cases Pure Oil Peppermint, 9s. to 9s. 3d., sold; 4 barrels Rose Leaves, 1s. 6d., out; 10 tons Quassia Wood, out; 3 casks Mogadore Beeswax, £6. 15s., sold; 3 caddies Musk, 8s. 3d.; 20 barrels Gum Thus, 10s., out; 75 boxes Gum Damar, 45s. to 45s. 6d., out; 6 casks Asphaltum, 30s., out; 5 bales Jalap, 2s. 7½d., out; 10 casks Cod Liver Oil, 5s. 9d. to 6s.; 1 case Croton Oil, 3½d.; 1 case Oil Juniper, 1s. 6d.; 3 cases Extract Nicaragua, 2s., out; 1 seron Ipecacuanha, 4s. 4d.; 100 bags Coculus Indicus, 25s. to 26s. 6d.; 32 bags Nux Vomica, 7s.; 59 baskets East India Tamarinds, 5s., out; 21 barrels St. Vincent Arrowroot, 4d., bought in; 6 tubs Camphor, 70s., out; 10 cases Oil Aniseed, 5s. 8d., sold; 3 casks Camomile Flowers, 66s.

IMPORTS OF DRUGS, &c., INTO LONDON DURING THE WEEK ENDING THURSDAY, OCT. 9.

THURSDAY, Oct. 2.—In the Euphrates, from Jamaica.
9 tons fustic, 2 tons logwood.

11 cks. balsam. In the Durham, from Quebec.

20 cks. boracic acid. In the John and Mary, from Leghorn.

FRIDAY, Oct. 3.—In the Devonshire, from New York.
1160 brls. turpentine.

In the Wave, from Casa Bianco.

15 arns. gum arabic.

SATURDAY, Oct. 4.—In the Bromleys, from Jamaica.
13 tons logwood.

In the Prince Albert, from New York.

286 boxes sarsaparilla syrup, 160 arns. bark.

MONDAY, Oct. 6.—In the John Bull, from Hamburg.
15 cs. gum arabic.

In the Caroline Read, from Calcutta.

135 cs. 9 hhds. castor oil, 764 bgs. saltpetre, 2 bgs. cardamoms.

In the Leonida, from Naples.

298 cks. tartar, 4 ch. indigo.

In the Lisbon, from Jamaica.

41 tons logwood, 1 pkg. succades.

In the Blanche, from Jamaica.

10 tons logwood.

THURSDAY, Oct. 9.—In the Nestor, from Calcutta.

220 cs. castor oil, 4 ch. indigo, 22 ch. lac dye.

In the Cornubia, from Calcutta.

335 cs. castor oil, 263 bags saltpetre, 39 ch. lac dye.

In the Geelong, from Calcutta.

210 cs. castor oil, 583 bdls. catch, 114 bls. safflower, 25 ch. lac dye, 76 ch. indigo, 308 bags saltpetre.

In the Clymene, from Calcutta.

117 ch. lac dye, 182 bags turmeric.

In the Elizabeth, from Colombo.

7 bls. cardamoms, 4 cs. citronelle oil.

In the Francis, from Calcutta.

A qnty. cassia fistula, 484 cs. castor oil.

TO CORRESPONDENTS.

* Gentlemen who send manuscript to the CHEMICAL RECORD under arrangement for payment are informed that original matter alone will be allowed to count; no abstracts, translations, or adaptations being receivable under the terms proposed. The propriety of this will be obvious.

DEAR SIR.—Would you have the goodness to answer the following questions in the next number of the RECORD. 1st. What do you pay, per page, for original communications? 2nd. Do you know of any free library in London, wherein are the latest chemical works? Yours, respectfully, W. A. M. 15, King-street, Camden-town, Oct. 15.—1st. That depends on special agreement. 2nd. We know of no free library. Medical men will find a better collection of scientific books in the College of Surgeons than any other institution we know of. Non-medical men of respectable rank can obtain an order of admission; the college authorities are exceedingly liberal.

SIR.—I should feel greatly obliged if you could give the recipes for making the Ess. of Jargonelle Pear, Ess. of Pine Apple, and Hydrosmia Perfume, in that portion of your CHEMICAL RECORD devoted to correspondents. I have it every week through my stationer. Yours obediently, J. JONES. 37, Tything, Worcester, Oct. 13th, 1851.—We cannot give our correspondent the precise formula for making Jargonelle Pear Essence, but we believe chloroform to largely contribute the flavouring material. The Hydrosmia Perfume is a trade secret to which we have not access.

SIR.—I admire much your offering (the little work attached to your excellent RECORD). I should be glad to see another. I think if you were to give, weekly, a lesson or an insight in chemistry to young persons desirous of learning, you would do good to others, and lose nothing by it yourself. If it met with approbation, I could then introduce your valuable RECORD amongst new subscribers, that otherwise will not be. Yours, truly, GABRIEL.—Our correspondent's request shall speedily be attended to.

o The Editor of the CHEMICAL RECORD AND DRUG PRICE CURRENT.—October 13, 1851. SIR.—May I trouble you for the following information: 1. How to manufacture soda water at home, by means of a small apparatus or machine, that shall be equal to Sodaweppe's, Webb's, Ellis's, &c. &c. 2. N.B. The vile stuff that is to be met with in certain towns and shops induces me to ask the above favour. Physicians, in prescribing soda water to their patients, little dream of the vile stuff they have to send for! 3. Would the coloured tinct. of quinine and the compound decoction of sarsaparilla be considered an elegant preparation? 4. Sulphate of soda, not the sulphate, what is the usual dose in dyspepsia, and is it advantageously combined with rhubarb and ginger, as in Gregory's powder? I am, sir, your most obedient servant. SWEX.—1. Messrs. Horne, Thornthwaite, and Wood, sell apparatus for the domestic manufacture of soda water. 2. The combination could hardly be called inelegant, though not particularly agreeable to sight or taste. 3. Commence with five grains. Combination with the substance indicated is permissible.

Post-office orders, or orders on a London house, should be drawn in favor of the Publisher, Mr. RICHARD RADCLIFFE FORD, 17, Upper Wellington-street, Strand.

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TESTIMONIALS.

From JOSEPH HENRY GREEN, F.R.S., President of the Royal College of Surgeons, London; Senior Surgeon to St. Thomas's Hospital; and Professor of Surgery in King's College, London.

I have made trial of Mr. Franks's Solution of Copaiba, at St. Thomas's Hospital, in a variety of cases of discharges in the male and female, and the results warrant my stating, that it is an efficacious remedy, and one which does not produce the usual unpleasant effects of Copaiba.

(Signed)

JOSEPH HENRY GREEN.

Lincoln's-inn-fields, 15th April, 1835.

From BRANSBY COOPER, Esq., F.R.S., one of the Council of the Royal College of Surgeons, London; Surgeon to Guy's Hospital, and Lecturer on Anatomy, &c.

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New-street, April 13th, 1835.

From H. A. CÆSAR, M.D., Surgeon, Professor of Anatomy in the Cork School of Medicine and Surgery; late President of the Hunterian Society of Edinburgh, &c. &c.

I have frequently prescribed Franks's Specific Solution, and deem it a valuable remedy in cases where Copaiba may be prescribed with propriety, and have no hesitation in stating it is superior to any other preparation of the Balsam. (Signed) H. A. CÆSAR, M.D.

South Mall, Cork, Nov. 9th, 1841.

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H. D. DAVENPORT, Secretary.

London: Printed by RICHARD BADOEFFER FORD, of No. 26, Church-street, Old Kent-road, Surrey (at No. 10, Crane-court, Fleet-street, in the City of London), and published by him at the office, No. 17, Upper Wellington-street, in the Parish of St. Paul, Covent Garden, Westminster.—Saturday, October 18, 1851.



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VOL. I.

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are prepared to supply timber and deals, &c., cut and uncut, to any extent, at the current prices of the day. They keep a large stock of WELL-SEASONED FLOORING and MATCH BOARDS, which, being manufactured by themselves, they offer at the lowest remunerating profit. Their extensive saw-mill will be found convenient to the purchasers of their timber, as it can be immediately cut and prepared to suit any purpose.

The Company beg leave to call the attention of the trade to their NEW MOULDING LIST, the largest ever published; and to state that, in addition to the numerous patterns therein delineated, their machinery enables them to execute every description of mouldings, from drawings, &c., with an accuracy and despatch which must ensure satisfaction.

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may be had at the Company's mills, or shall be forwarded on receipt of eight postage stamps (the amount of the postage thereon).

The Company (without previous preparation) manufactured and delivered to the Great Exhibition fifty statute miles of sash bars within ten days after receiving Messrs. Fox, Henderson, and Co.'s order, which these gentlemen have certified, and that the work was executed to their entire satisfaction.

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On the First of November will be Published (to be continued Monthly), in demy 8vo., price
One Shilling, No. 1 of

THE

LIFE ASSURANCE CHRONICLE:

A MONTHLY RECORD OF, AND GUIDE TO, ASSURANCES, ANNUITIES, AND
GENERAL FINANCE.

Deeply impressed with the immense benefits derivable by society at large, and by our highly-civilized community in particular, from an organized extension of the great system of Life Assurance, and convinced that the beneficial effects alluded to can never be properly felt till a more extended knowledge of the great principles of Assurance is disseminated, and till an accurate, a faithful, and an impartial record of the progress made and daily making exists, the conductors of the LIFE ASSURANCE CHRONICLE have determined on establishing, under the above title, a Monthly Magazine devoted to the interests and to the advancement of Life Assurance.

Having gathered round them a staff of gentlemen long and intimately conversant with the subject, and many of whom are now actively connected therewith, the conductors have no fear of failing in the task they have proposed to themselves. Aided, moreover, by the possession of peculiar and rarely accessible sources of information, by elaborate statistical data prepared by skillful actuaries, and by a widely-extended correspondence, they feel confident in being able to place before the public a record of the present state, the past and future prospects, of Life Assurance detailed yet succinct, unbiassed and impartial in an eminent degree.

Full reports will be given monthly of such transactions of the established Assurance Corporations as are likely to excite public interest or to conduce to the public advantage. Every effort will moreover be made to place the public in possession of an accurate and minute summary of Life Assurance progress during the past month.

In addition to this, and in order to combine amusement with instruction, each number of the Magazine will contain two chapters of an entirely new and original Tale, by a popular Author, entitled "The Battle for Bread: a Tale of London in 1860."

No efforts will be spared to place the statistical department of the Magazine on the most accurate and clearest footing; and prompt attention will be paid to every passing topic bearing on Life Assurance, and to the inquiries of any correspondent desirous of obtaining peculiar information.

Arrangements have been made with a gentlemen of extended experience and acknowledged abilities in matters of Assurance who will contribute a continuous series of papers on the subject of Life Assurance as a national system, on the general advantages derivable therefrom, on the peculiar benefits held out by particular companies to suit the views of those in the class of expectant assurers in particular states and professions in life. Great care will be taken, as regards the last named subject, to point out, clearly and distinctly, to persons desirous of effecting Assurances the best medium for the investment of their capital, and the Assurance Companies whose modes of granting policies are more specially adapted to their wants. Thus the clergyman, the merchant, the broker, the clerk, the soldier, the sailor, the freemason, the artist, or the man of letters, will all find in the LIFE ASSURANCE CHRONICLE a sure guide to their immediate requirements in Assurance. The members of each class will be clearly directed to modes of Assurance likely to suit their particular views; and much unnecessary confusion and misrepresentation—much deplorable disappointment and tribulation—will consequently be avoided.

While the main object and chief aim of this Journal will be the advancement of Life Assurance, considerable attention will be paid to other financial subjects, indirectly connected therewith, yet over which it exercises considerable influence. Annuities, Loans, and Mortgages, inasmuch as they affect or are affected by Life Assurance, will be treated of at length, and in a manner suited not only to the comprehension of the accomplished financier but to the comparative novice; to whom a clear and proper exposition of the best medium of financial investment is of so much and of such vital importance.

To give a pleasing variety to the LIFE ASSURANCE CHRONICLE, while, at the same time, it conveys important information, an interesting collection of papers, by a writer of literary eminence, will be given monthly, entitled "Materials for a History of the Investment of Capital in England." These will form an anecdotal and historical survey of finance and financiers from the time of the Crusades to the discovery of the gold placers of California downwards.

All Communications must be sent to the Office of the LIFE ASSURANCE CHRONICLE, 17, Upper Wellington-street, Strand, addressed to the Publisher,

MR. RICHARD RADCLIFFE POND.

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Gresham Life Assurance Society.—The progress made in the financial department of this Society, since its formation three years back, has been very great. It appears that the gross amount paid to the representatives of deceased assureds in the three years amounted to £8171. 3s. 6d., as a set-off against which there was a sum of £33,640. 4s. 8d. received as premiums upon 1373 policies of assurance during the above term. The number of assurances now in force is 1160, assuring a sum nearly equal to half a million, and the annual income receivable from premiums alone, £15,158. 9s.

At the last Annual General Meeting, the report of which is now before us, the Chairman made the remark that "if, when they sought the advice of a medical man, they made the payment of the fee dependent upon the acceptance of the life, it would be like holding out a bribe to induce him to pass indifferent lives."

GRESHAM LIFE ASSURANCE SOCIETY.

The Third Annual General Meeting of this Society was held on Thursday, October 2nd, 1851, W. Tabor in the chair. Among the members present whom we were enabled to recognise were—Mr. Matthew Marshall, chief cashier of the Bank of England; Mr. William Smee, accountant-in-chief of the Bank of England; Mr. W. Tabor, Mr. John Beadnell, Mr. John Britten, Mr. F. A. Davies, Mr. J. L. Hancock, Mr. Alfred Smee, F.R.S.; Mr. Edward Solly, F.R.S.; Mr. W. H. Thornthwaite, Mr. G. Tyler, Mr. D. Hill, Mr. B. L. Sorrell, Mr. Charles Tyler, Mr. Jas. Price, Mr. J. C. Hardy, Mr. N. W. Tyler, Mr. T. H. Devonshire, Dr. Aitken, Mr. Joshua Barber, Mr. Jenkins Jones, Mr. G. H. Hodges, Mr. G. A. H. Dean, Mr. W. W. Wilson, Mr. T. Washington, Mr. W. H. Fooks, Q.C., Mr. G. H. Ladbury, Mr. A. T. Bower, Mr. W. Whitelock, Mr. W. Hillman, Mr. J. S. Bartrum, Mr. F. West, Mr. T. Farnell, Mr. J. E. Ladbury, Mr. John Britten, jun., Mr. G. Beadnell, and Mr. T. A. Pott.

The following Report was read by the Secretary, Mr. T. A. Pott:—

THIRD ANNUAL REPORT.

Your attendance has been requested this day to receive the report from the Board of Management, relative to the Society's transactions during the year ending July 31st last.

After a careful and minute inspection of the various books and vouchers, your Auditors are satisfied of the correctness of the annual statement of receipts and disbursements submitted to them by the Board of Directors, and the same is now presented for your adoption.

The Directors who retire on this occasion are William Tabor, John Britten, James Lyne Hancock, and William Henry Thornthwaite, Esq., and, all being eligible, offer themselves for re-election.

Your Directors have recommended to the Shareholders the following list of gentlemen to serve the office of Directors in lieu of those retiring:—William Tabor, J. L. Hancock, W. H. Thornthwaite, and David Lloyd, Esq.

Your Directors regret to announce that the Society has been deprived by death during the past year of the services of the late lamented Professor Davies, one of the Auditors.

These officers being elected annually, Messrs. G. H. Ladbury, Geo. Lowe, F.R.S., and Thomas Perry, retire accordingly, and, being eligible, offer themselves for re-election: Messrs. Lowe and Perry for the policyholders, and Mr. G. H. Ladbury for the shareholders. Mr. William Whitelock, one of the Society's earliest shareholders, is a second candidate on the part of the proprietors.

By reference to the book recording the Directors' attendances, now on the table, it will be seen that on an average nine were present at each board meeting, in addition to committee meetings, and the daily attendance, given in turn, in order to facilitate the completion of business.

Your Directors have the satisfaction to announce a large accession of new assurances, as from 1,063 proposals for assurance, amounting to £111,690. 19s. received in the period comprising the third year, ending July 31st last, four hundred and fifty-four policies were completed, assuring £164,853. 15s., the annual premiums receivable therefrom being £5,124. 3s. 4d. Several proposals were still under consideration at the above date, and the remainder were either declined or not taken up by the parties at the rates proposed.

With respect to claims, your Directors in their last report intimated that the singular exemption experienced by the Gresham during the first two years could not be expected to continue, but that the Company must be prepared to meet the same rate of mortality as that experienced in other offices, transacting a similar business.

The gross amount paid to the representatives of deceased members, from the establishment of the Society, amounts to £8,471. 3s. 6d., showing an average for the three years ending 31st July last of £2,823. 14s. 2d., the gross payment within that period being as above stated, £8,471. 3s. 6d. From which, deducting sums received in the same period in respect of policies lapsed or otherwise discontinued, 4,658 6 6

Reduces the net amount paid for claims to	3,812 16 0
The gross number of policies effected during the three years was	1,373
Assuring	532,555 2 0
Premiums received thereon	33,640 4 8
The number of assurances now in force is	1,160
Assuring	452,505 7 0
The annual income receivable from premiums alone being	15,158 9 0

Your Directors have, for a considerable period, declined acceding to applications for the allotment of shares, except in a few instances, where the co-operation of influential persons was calculated to promote the prosperity of the Office by co-operation.

With regard to proposals for the assurance of declined lives, your Di-

rectors very carefully consider every single case which is offered to them, in order that the advantages of life assurance may be afforded to the individual, wherever it is practicable, at moderate rates. During the past year, however, the Directors have resolved to limit the assurance of lives to persons who are strictly temperate in their habits, inasmuch as they find a very high and uncertain mortality appertains to those who are in the slightest degree addicted to intemperance.

Although the ratio of mortality is unquestionably higher amongst the declined than the healthy lives, the Directors have much pleasure in stating that this branch of their business shows a highly satisfactory result. Many who were assured in the first years of the Society, at an advanced rate, have, during this year, on re-examination, been found to have attained so improved a standard of health as to enable the Directors to reduce, and, in some cases, to remit the entire extra premium.

During the past year the Directors have made every exertion to extend the first-class department of the business, and their efforts have been so far successful that a considerable majority of all the lives assured are of this character.

The Directors have the gratification to announce that the prospects of the current year are most encouraging, as during the two months just elapsed more new assurances have been completed than at the corresponding period of any previous year.

By order of the Board of Directors,

Oct. 2, 1851.

(Signed)

THOMAS ALFRED POTT.

The CHAIRMAN moved that the Report be adopted, printed, and circulated among the Proprietors. He was happy to tell them that the property of the Society still continued. They had received during the past year the large sum of £16,000 for premiums, which, after the payment of the claims and re-assurances, left a large amount to the credit of the Society. The claims in the year might appear rather heavy, but when they considered that during the first two years they were nearly exempt from claims, having been called upon to make but one small payment, the claims which had fallen in from the commencement, spread as they were over three years, could not be considered large. The premiums that had been received, and the receipts on account of the policies that had lapsed, they would perceive, went a great way towards reducing the amount of these claims, inasmuch as, after settling all their liabilities in this respect, a balance of £25,000 remained out of the premiums that had been received over and above all the claims during the three years the office had been established. (Hear, hear.) After explaining some apprehension that existed with respect to the amount of interest the Society had received upon advances, the Chairman proposed the motion with which he set out.

Mr. WILLIAM SMEE, accountant-in-chief of the Bank of England, in seconding the adoption of the Report, congratulated the shareholders and policy holders on the satisfactory progress of the Society. They were all under great obligations to the Board of Directors for their activity and enterprise in the promotion of the welfare of the Society, and he was sure they all had the highest confidence in those distinguished accountants who, in their characters as auditors, had certified to the accuracy of the balance-sheet. He would not longer detain them, except to observe that he entertained a confident belief that the Gresham Life Assurance Society would ever hold a first place among the Assurance Societies of this great country. (Loud cheers.)

Mr. BRITTON, jun., then entered into an analytical discussion of the balance-sheet, and asked a number of questions with respect thereto, which were satisfactorily answered, in which course he was followed by Mr. WEST, a solicitor, who called in question the right of the Directors to make terms with their medical officer, he being also a Director, without first seeking the assent of the shareholders thereto. He held that, under the Joint-stock Company's Act, no Director could act in such capacity without the approval of the shareholders, and handed in a protest to that effect, whilst Mr. DEVONSHIRE, the solicitor to the Company, expressed the very opposite opinion. The Society required the best medical services—they had secured such valuable services—and it was perfectly competent for the Directors to make the necessary arrangements with one of their own body so competent as Mr. Smee to discharge such duties.

In the course of the discussion it was elicited that the medical officers of the Society had examined 3400 persons, seen some two or three times, and that the average cost in each case was under seven shillings.

The CHAIRMAN remarked, that if, when they sought the advice of a medical man, they made the payment of the fee dependent upon the acceptance of the life, it would be like holding out a bribe to induce him to pass indifferent lives. They had frequently to pay a fee for the examination of lives which it would not have been safe for the Society to accept.

Mr. JENKIN JONES, in explaining to the Meeting the position of the Society, observed that, whilst the entire liabilities of the Company amounted to £470,000, the value of their present income was £500,000; and in addition they had £25,000 in hand. The average ages of the assured were of the most favourable kind, ranging between 30 and 32. It was much to be deprecated that persons ignorant of the nature of figures should endeavour to injure an estimable and flourishing institution, either for the purpose of displaying their oratorical powers, or to give vent to feelings of disappointment. In reference to the objection that had been urged against the Directors for the payment of £800, under the head of preliminary expenses, they must be aware of the great competition that existed among assurance offices, and the expenditure which such competition necessarily involved. It should be borne in mind, however, that under the provisions of the Deed of Settlement not more than one-fourth of the expenses incurred in establishing the Society during the first seven years of its existence would be carried to account at the first division of profits to be declared in 1855—the remaining three-fourths would be spread over an extended period.

Mr. MATTHEW MARSHALL, chief cashier of the Bank of England, in

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moving the appointment of the Directors, submitted to the Meeting the names of the whole of the present members of the Board, with the exception of that of Mr. Britten, sen., in place of which the name of Mr. David Lloyd had been substituted. Mr. Britten, it appeared, had sent round a circular to the members of the Society, alleging that his brother Directors were opposed to him solely because his son had made inquiries respecting the accounts, at the previous annual meeting. The statements made by Mr. Britten were replied to by

Mr. THORNTWATER, one of the Directors, who addressed the Meeting in the following terms:—

Gentlemen—As circulars have within the last few days been issued to the shareholders by Mr. Britten and son, which contain various allegations directly contrary to fact, I have extracted from the official documents of the Society materials from which the shareholders may be rightly informed of the nature of the circulars which have been issued. Mr. Britten has stated that his reasons for claiming your support are that he was one among the earliest of the Directors who signed as promoters of the Society, and took upon themselves the responsibility of its establishment. Perhaps you will be somewhat startled at hearing that he was the very last Director that was admitted into the Society, being proposed at the fifteenth provisional meeting of the Company, which was held on June 5th, 1848. One week after, on the 13th of June, Mr. Britten attended a meeting at which these premises were ordered, and at which the inauguration dinner, which you all know was so serviceable to the interests of the Company, was determined on. Three days afterwards, on the Thursday, the 15th of June, the agreement for the offices was ordered to be signed, and as the responsibilities undertaken by the Directors were somewhat heavy, we find the following entry made in the minutes of that day:—"Mutual indemnity. The Committee directed the solicitor to prepare an agreement of mutual indemnity amongst the Directors in respect of liabilities previous to complete registration." After Mr. Britten's circular, you will no doubt think that he duly signed the deed of indemnity, and doubtless you will be astounded that this little document had such an effect on that gentleman, that not only I hand it up to you unsigned by him, but he came no more to the Society for eleven months from that period. Mr. Britten signed the consent to act; but how did he fulfil that contract deliberately and voluntarily entered upon by him? On reference to the deed of settlement, I find the majority of the Directors signed the deed on the 3rd of July, and the remainder on the 6th and 7th, with the single exception of Mr. Britten, who, when it was taken to him at his own residence for that purpose, gave various evasive answers, and, when repeatedly pressed, said to the Secretary, "I refuse to do so." Mr. Britten claims your support for having taken upon himself the responsibility of its establishment. On consulting the committee book, I find that during the anxious hours we spent in the preparation of the deed of settlement he was not amongst us. But this is not all; his refusal to sign the Deed caused us some anxiety and embarrassment, for at the last moment we were thereby deprived of his signature to the shares we had calculated upon to enable the Society to begin active operations. After this embarrassing and injurious conduct, you may judge how far Mr. Britten is justified in calling himself in his circular to you one of the earliest promoters of the Society. After the commencement of the Society, the Directors had by great labour to develop its mode of operation, and doubtless, after Mr. Britten's circular, you cannot fail to believe that he performed his share of the necessary trouble. But how does the matter stand? Instead of the average of 37 attendances, we find that he never came to any meeting whatsoever till the 13th of June, 1849. Instead therefore, as he would lead you to infer, that he had contributed to the prosperity of the office, we find that he did not come amongst us till the success of the office had been a subject of public conversation; and, instead of undertaking responsibility, the office was not favoured by his attendance till all responsibility was at an end, and until he had ascertained from persons acquainted with life assurance operations that the office had been perfectly successful. After Mr. Britten's circular, you will perhaps be astonished to be informed that he came to promote the interests of the office when 398 policies had been completed, yielding an income of upwards of £1300. Up to the termination of the first year, his desire to forward the office was evinced by eleven attendances at the Board, when most of the other Directors had been present at least fifty times. When Mr. Britten came among us he was treated with the greatest kindness, to make him forget the feelings which his former conduct was calculated to engender. Nevertheless, we speedily found that the discussions at the Board were heard of abroad, which caused an unpleasantness amongst the members of the Board, which extended even to the clerks in the office. After some period Mr. Britten suddenly announced to the Secretary, in the presence of Mr. Smee, that he was dissatisfied with the whole management of the office, but that he would leave it to his son, who was a pretty speaker, to put all right for him at the general meeting; and that "his boy had shown them at the Artillery Company that he was no fool, and he would show the shareholders of the Gresham what he could do." Our excellent Secretary was much annoyed at this statement, and presented a long report to the Board at the next meeting; but at the urgent request of Mr. Britten, who declared that he did not intend to convey such meaning, the matter, by common consent,

was allowed to drop. At the last general meeting, however, Mr. John Britten, who is not only a partner but son of a Director, living in the same house, came to make the proposed speech. The subject matter, as far as appertained to mere financial questions, was proper enough, but he contrived to handle it with such inferences of improper conduct, that many persons present could not help thinking that he had some exclusive information, through his father and partner, of delinquencies in the office; and, as a result thereof, shareholders applied to the Directors for information, and policy holders required information before they consented to continue their assurances. Immediately after the meeting, Britten came to the Deputy-Chairman, said he was sorry for what his son had done, that it was entirely without his knowledge or consent, and that his boy had acted very foolishly, and had much better have stopped at home, and minded his business. But Mr. Britten evidently forgot his previous promise of opposition, and now holds up his son's conduct to your admiration. Now, both father and son have stated in their circulars to you that the asking of financial explanations is the sole cause of the disagreement. I think it necessary to read a minute from the Board, of June 26, 1851, and after the minute you may judge whether Mr. Britten has rightly informed you in this matter. Mr. Britten, jun., talks of a clique of Directors. Now what can be said to a gentleman who deliberately tells you a unanimous resolution of a Board was the act of a clique of Directors? Mr. Britten relies upon the experience which he has gained. During the period of formation and regulation of the office, when he stopped at home, it is difficult to ascertain how he obtained experience. During the past year, the Directors have had no intercourse with him, not wishing to expose themselves to perverted accounts of their conversation. It is perfectly well known to all about us that every information has always been supplied to the shareholders and policy-holders of the institution; and yet, in the face of this, Mr. Britten, jun., has led you to infer that the object of the Directors has been to prevent investigation, and to conceal the proceedings of the Society. As far as the Board and officers are concerned, our object has been to promote a proper confidence between the Directors, without which the proceedings of no office can be effective. When we discovered a focus of discord centred in the persons of Mr. Britten and his son, we immediately took means to repress its baneful influence, the more especially as the father has repeatedly given us to understand that the taste of his son for publicity was not to be suppressed by any human power. I believe, gentlemen, I have proved to you that the statements which have been put forward both by Mr. Britten and his son are contrary to fact. You will perceive that it is perfectly impossible that the Directors can ever hereafter have any confidence in Mr. Britten, and it is the unanimous opinion of the remaining nine that the presence of Mr. Britten at the Board would be a serious obstacle to the future prosperity of the office.

The matter terminated by the rejection of Mr. Britten, by a large majority, an amendment for his re-election having been proposed by Mr. Britten, jun. The retiring Directors, including the new Director, Mr. Lloyd, recommended by the Directors, where then re-elected by an overwhelming majority, and with much cheering. It was stated the Directors held proxies to the extent of 7 to 1 in favour of the recommendation in their report, that Mr. Lloyd should supersede Mr. Britten.

Mr. ALFRED SMEE moved that the thanks of the Meeting be awarded to the Auditors, Messrs. Perry and Ladbury, and that the sum of £45 be voted to them for their services. The names of these gentlemen were well known throughout the world, and carried great weight with them.

Mr. WASHINGTON seconded the motion, and it was carried unanimously. The Auditors on the part of the policy-holders were also elected.

A vote of thanks having been awarded to the Directors,

Mr. SOLLY returned thanks on behalf of the Board. They regarded the vote as a mark of their confidence, and as tending to show that they believed they had worked hard, and that they were satisfied with the results of their labours. (Hear, hear.) So long as they were permitted to hold office, and enjoyed, as they believed they did, the confidence of the shareholders, they would use their best exertions to promote the interests of the shareholders, and at the same time their own interests—for they felt that their interests were identical with those of the shareholders and policy-holders. (Cheers.)

Thanks were next voted to the medical and legal officers.

Mr. A. SMEE returned thanks on the part of himself and brother officers, who were to be found in nearly every town, for the kind manner with which they had voted to them their thanks. He assured them that the office of medical adviser was one of great responsibility, and required great experience in estimating the duration of human life, and much care in the selection of lives. They had all done the best they could for the benefit of the Society. (Hear, hear.)

A vote of thanks was next awarded to the Actuary, Mr. Jenkin Jones; whilst a special vote was passed to Mr. T. A. Pott, the Secretary, and the other officers of the Society.

Mr. T. A. POTT said he was much indebted to the shareholders and policy-holders for the compliment they had awarded him and the other executive officers. He assured them that they all used their best exertions to promote the increased success of the office. They were all fully aware of the high and important position the Society now occupied, and the testimonial they had passed would spur them on to use, if possible, increased exertions. (Cheers.)

A cordial vote of thanks was then passed to the Chairman for his able and courteous conduct in the chair, on the motion of Mr. JONES, seconded by Mr. BRITTEN, jun., to which the Chairman offered a suitable reply, and the Meeting separated, after an assurance from Mr. Britten, sen., that whilst in the direction he had ever experienced the utmost kindness from his colleagues, and that he entertained the very highest opinion of the soundness and greatness of the Gresham Life Assurance Society.

ORIGINAL SERIES.

REPORTS OF LECTURES ON MATERIA MEDICA.

By JONATHAN PEREIRA, M.D., F.R.S., &c.*

(Continued from page 231.)

Gentlemen,—Before I proceed with the subject of this morning's lecture, I must advert for a few minutes to a matter personally referring to myself, viz., the publication of the lectures which I am engaged to deliver at the Pharmaceutical Society. If there are any gentlemen present with a view to take notes of my lectures for the purpose of publication, I beg of them to desist, because they are committing an act by which they render themselves amenable to legal proceedings, both by common and statute law; for I hold in my hand an act of the reign of William IV., which renders any person so doing liable to heavy penalties; and also it has been repeatedly decided that any person reporting and publishing lectures is guilty of an offence against the common law of this country, as the case which I can recite will prove. (A case recited.)

Moreover, I beg of them to desist, because it is a moral wrong. These lectures are my property, the results of my labour and research, and I am only engaged to deliver them to you by the council of this society for your instruction, and not with a view to publication.† Therefore, the copyright of these lectures is mine, and I will never dispose of it, or allow any person to deprive me of it under any pretence. There are many other reasons why I will not consent to have my lectures reported as here delivered. In the first place, it is impossible for anybody, however skilful, to report them correctly; consequently, if they were to be reported and published, I must do that myself. I have neither the leisure nor the inclination to do this. This statement respecting this impossibility has been proved over and over again in the experience of medical journals; hence, I reported my own lectures in the "Medical Gazette" some years ago.

Again, I often find it necessary to comment severely on some of the processes of the London Pharmacopœia; and what would my colleagues in the College of Physicians say to me if they saw these comments in a public journal? Besides, I often bring before you crude and immature notions respecting many subjects of my lectures, upon which my experiments are incomplete; therefore I should be sorry to see them in a published form. To make these lectures interesting, I frequently allude to matters incidentally in a jocular manner, that would be unbecoming and appear trivial in a printed report.

After these observations, gentlemen, I do hope that you will support me in maintaining my own rights and wishes respecting this matter; as I should be extremely grieved if any painful proceedings should arise out of my connection with you in my capacity as your instructor, especially as I regard every gentleman here present in the relation of a friend.

I must revert for a short time to a subject over which I passed somewhat cursorily in a previous lecture, especially as I am in possession of an inaugural address by Dr. Martius on the substance alluded to, viz., *hyraceum*. The animal from which this substance is obtained resembles a

hare, but belongs, as I have previously stated, to the pachydermata. Its urine, like that of the hare, is thick, and of a glutinous nature. The fresh urine is of reddish tint, and as the animals are in the habit of secreting it in one spot, from which the watery particles evaporate, there remains a tenacious residuum, which hardens in the air. The natives call it "dassenpiss." Now the hyraceum cannot be altogether a resinous secretion, for Quekett and myself have found in it, by the aid of the microscope, cellular tissue and woody fibre. For these reasons it has been assumed that it is the solid excrement of the hyrax. There are several other reasons for holding this view of the origin of this substance, as I have obtained slight indications of bilious matter therein, which you will perceive by testing it with sulphuric acid and sugar, after the method of Pettenkofer. Dr. Martius arrives, after a lengthened investigation, at the conclusion, as stated in his inaugural address, that this substance is only the dung of the hyrax; but I am glad to have it in my power at once to dispel this illusion, by showing you some of the solid excrement of this animal, which has been obtained from a specimen in the Zoological Gardens. This excrement has neither the smell nor the appearance of hyraceum, therefore it cannot be entirely that substance. The only conclusion that I can arrive at regarding the origin of this body is, that it is a dried mixture of the urinous and anal excretion of the hyrax.

Dr. Martius gives a formula for the preparation of a tincture of hyraceum, which I will put you in possession of:—Digest 3 oz. of hyraceum with 18 oz. of water for eight days, at a temperature of about 80°; make up the water to 21 oz., and add 3 oz. of alcohol, and filter. The dose thereof is from 10 to 60 minims. It is very desirable that a full grown hyrax should be anatomically examined, to ascertain if there are any glands which secrete the hyraceum, as only the foetal animal has been examined by Mr. Quekett, who could find no trace of such glands.

To return to the subject which I left unfinished in my last lecture, I wish to draw your attention to the fact, that that which is usually sold in the shops under the name of hartshorn is not true hartshorn, but bone shavings. If you will observe these two specimens, you will perceive that real hartshorn is of a brown colour, whilst the bone shavings are perfectly white. Although they are, in reality, both bone, there is a difference in their composition, namely, the bone shavings contain fatty matter, whilst the real hartshorn is free from it.

This table contains the composition of hartshorn:—

Soluble cartilage	27.0
Phosphate of lime	57.6
Carbonate of lime.....	1.0
Water and loss.....	14.5

100.

The soluble cartilage, or gelatin of hartshorn, is the constituent, which dissolved thereof in making the decoction with water, is taken by invalids. It belongs to the collin-series of gelatinous bodies, as it is precipitated by tincture of galls, but not by alum, and forms a jelly on cooling. When the horns of the stag are burnt with free access of air, there remains a white substance, which was formerly much used in medicine under the name of burnt hartshorn. It was also directed to be employed by the pharmacopœia in the preparation of antimonial powder.

The sheep is an animal of the order *ruminantia*, which I shall but briefly notice. The fat obtained from the kidneys, under the name of mutton suet, has been used in pharmacy. It is preferred in some cases to hogs' lard, for its greater consistency.

* Delivered at the Pharmaceutical Society.

† At the Pharmaceutical Society's committee meeting on Thursday last, a member of the council, speaking on behalf of Dr. Pereira, advanced the plea that the pharmaceutical lectures were only an anticipation of Dr. Pereira's coming treatise on *Materia Medica*, the sale of which it would prejudice.

The next animal of the order *ruminantia* to which I shall have to direct your attention is the *bos taurus*. All the orders of the class *mammalia*, as I have previously mentioned not excepting the whale, are fed when young by a secretion from the mother in the shape of milk. In fact, the young of all vertebrata are nourished in a similar manner, that is, by something exuded from the parent. The germ of the chick in the egg occupies but a minute space, in comparison with the food which is therein stored for its nourishment. The same observation also applies to the roe of fish.

This table will show the intimate relation that exists between the food of the young of the vertebrata, supplied by their parents, and their flesh:—

	Flesh.	Milk.	Eggs.	Fish Roe.
Organic Nitrogenized principles.	Fibrine, Albumen, Gelatigen extract.	Extract caseine.	Albumen and Vitelline extract.	Albumen, Gelatine extract.
Organic Non-nitrogenized principles.	Fat, Lactic acid.	Butter, Sugar.	Fat, Sugar.	Fat.
Inorganic principles.	Earthy salts, Alkaline salts, Iron.	Earthy salts, Alkaline salts, Iron.	Earthy salts, Alkaline salts, Iron.	Earthy salts, Alkaline salts, Iron.
Water.	Water.	Water.	Water.	Water.

As the *bos taurus* is the principal source from which is obtained that almost universally consumed dietetic agent, milk, I shall, gentlemen, conclude this morning's lecture with the consideration of its properties. Milk is an opaque, white, emulsive liquid, with a bland, sweetish taste. It has a specific gravity of about 1.030; but this latter varies considerably when obtained even from the same cow at different periods of the same day. Its emulsive appearance is due to myriads of small globular particles floating in it, which can be seen by the microscope. These globules contain fat or butter, and when broken, as in the operation of churning, the fat escapes, and conglomerates in the state as represented by butter. When milk is allowed to remain at rest for a few hours, there is formed on the surface an oleaginous stratum, which is cream. This process, when conducted in a properly graduated glass, is one of the means employed to ascertain the goodness of milk, which, together with its specific gravity, afford sufficient evidence of its quality. Much has been written about the adulteration of milk, with a view to prove that it is sophisticated with a numberless variety of articles, such, for example, as sheep's brains; but I can only say that I have never succeeded in finding any of these substances in the specimens I have examined, and in this statement I am borne out by Dr. Hassal, in the "Lancet." My opinion is, that the only article used to adulterate milk is that which is commonly said to come from a pump.

One of the most important ingredients of milk is casein, which is usually separated from it by rennet (an infusion of the fourth stomach of the calf), in the form of curd.

It is curious to observe the identity of the reactions of metallic salts with this body and the albumen of eggs. If we add a solution of bichloride of mercury to milk, a precipitate is formed, which can be dissolved by caustic potash, without any metallic oxide being thrown down. A precisely similar precipitation occurs upon the addition of sulphate of

copper and a resolution by caustic potash. The same reactions occur with fluid albumen.

The sugar of milk, or lactine, is also a constant constituent of milk, although larger in that of herbaceous animals than in that of the carnivora. To prove the relation that milk-sugar bears to cane-sugar, I will show you that its reaction with Tromsdorf's tests is identical with that of cane-sugar—that is, the copper oxide will be reduced by its agency.

I should mention that lactic acid does not exist pre-formed in milk, but is produced by the catalytic action of the other ingredients of the milk on the sugar. The salts of the milk are principally phosphates, but it is also curious in containing potash salts, which no doubt are intended in the animal economy for the formation of muscular fibre, as potash is a necessary constituent thereof. This table is an analysis of the

COMPOSITION OF THE ASHES OF COWS' MILK.

Soda (in milk combined with lactic acid) ..	0.0115
Chloride of Potassium	0.1350
Phosphate of Soda	0.0225
Phosphate of Lime	0.1805
Phosphate of Magnesia	0.0170
Phosphate of Iron	0.0032

It is oftentimes popularly believed that milk is derived from other sources than the mammalia, and, no doubt, there are many plants which yield a fluid resembling it in its physical characteristics. This fallacious idea will be at once dispelled upon a comparison of the results obtained by chemical analysis of one of the most celebrated of these vegetable milks, and that derived from the cow, as exhibited by these tables:—

COW-TREE MILK.

(*BROSIUM GALACTODENDRON*.)

Gelatine (resin or wax)	C ⁵⁰ H ⁴¹ O
Resin	C ⁵⁰ H ⁸ O
Resin	C ²⁰ H ¹⁶ O
Caoutchouc (?)	C ⁴⁰ H ³³ O ³

Fermentable sugar
Gum and extract
Albumen
Lime { Phosphoric acid
Magnesia { Acetic acid traces
Butyric acid traces
Water

COMPOSITION OF MILK:

		CONSTITUENTS.
Milk	Cream ..	Butter { Solid fat
		{ Liquid fat
		Butter { Caseine
	Skim milk	{ Serum or whey
		{ By rennet
		{ Not by rennet, but by acetic acid
	Whey or serum...	{ Saccharine matter
		{ Azotized matter
		{ Soluble in alcohol
	Salts	{ Soluble in water, not alcohol ..
		{ Insoluble in water ..
		{ 10 Alkalies, sulphates, and phosphates.
		11 Earthy phosphates.
		12 Ferruginous phosphates.

Gentlemen,—In consequence of an unavoidable engagement at the London Hospital, I shall be reluctantly compelled to limit my lecture this morning to one half of its usual duration.

The only remaining animal of the order *ruminantia* which we have to consider is the *moschus moschiferus*, or the animal

from whence the musk of commerce is obtained. This species is distinguished from the deer by the presence of canine teeth and the absence of horns. The most interesting point connected with the *moschus moschiferus*, is the anatomy of the musk sac. I may mention that this sac is peculiar to the male animal; it is situated in front of the scrotum. If the belly be examined by laying the animal on his back, a small aperture, leading into the musk canal, may be observed, which terminates in the cavity of the musk sac. This aperture is behind the navel, and directly in front of the preputial orifice. In the musk sacs of commerce these peculiarities cannot be always observed, in consequence of the openings being sewn up or fastened with a ligature; but by soaking them in water they may be easily rendered apparent. The preputial orifice is more prominent than the one which leads into the musk sac, and has a number of longish hairs in the form of a pencil projecting from it. The hair around the musk sac aperture radiates from the central opening in a manner so peculiar, that the genuine sac may be distinguished from a factitious one by this means. In separating the musk sac from the animal, a portion of the hairs passing through the covering is usually cut off with it, which circumstance affords, when present, another evidence of its genuineness.

The sac is of an oval form and flat, and free from hair on that side which is in contact with the belly of the animal. The internal aperture is surrounded with fine hairs, which readily fall off. They are to be seen in the musk of commerce.

In the interior of the musk sac are a great number of circular glands, which are supposed to secrete the fluid, which becomes ultimately converted into the granular substance known as musk.

It is said that the Chinese separate the sac from the animal before it is completely dead, upon the assumption that the musk so obtained is of a superior quality to that derived from the completely dead carcass.

The *moschus moschiferus* is found between 16° and 58° north latitude, and 92° and 155° east longitude.

There are four kinds of musk known, viz., Chinese, Russian, Bucharian, and false. This latter has been described by Dr. Martius under the name of Wampo musk.

The Chinese musk is imported in cattles (small rectangular boxes), covered by silk externally, and lined with sheet-lead and paper, on which various devices are printed, such as the methods of taking the musk-deer and cutting off the sac. Each sac is also wrapped in a piece of paper, on which a similar device is printed, and a description of its contents, sometimes in English, although generally in the Chinese language, with the vendor's name.

The Russian musk is of an inferior sort to the Chinese in smell, and much less powerful.

There is also a long story told by a German writer, to the effect that the Russian variety is imported into England for the purpose of being exported to China, with a view to undergo some process which the Chinese are said to be adepts at, and which is considered to greatly improve the quality of the musk. But I believe I have it in my power to contradict this statement, as I have inquired amongst drug merchants and brokers, and can obtain no knowledge of any such importation or exportation of Russian musk; therefore the whole tale is a fabrication.

I should mention that the musk odour is not peculiar alone to the *moschus moschiferus*, but there are several animals which emit it, as, for example, the musk ox and the musk cat, and also that there are two varieties of the

moschus from which musk may be procured, that we know of, and it is very probable that there are others.

The Chinese are great adulterators of musk, and makers as well of factitious pods. These pods may be distinguished from the genuine by these characteristics: the absence of the aperture in the middle of the hairy sac, the hair not radiating from this aperture in a circle, and no remains of the penis being discoverable attached thereto.

The best method that I know of chemically to test musk, to ascertain its purity, is that of Berzelius, namely, make an infusion of a decoction of musk with water, from which filter the insoluble matter; take one portion of the liquid, and add infusion of galls, which should produce a precipitate if the specimen under examination be genuine. To a second portion add a solution of bichloride of mercury, and to a third portion add a solution of acetate of lead. If the musk be genuine, no precipitate will fall down in either instance.

Musk pods often contain various heavy substances, to increase their weight, by which the purchaser is defrauded. I have, myself, found a number of pieces of lead in them.

As the time is nearly expired which I am able to devote to the consideration of this subject on the present occasion I must defer enlarging on the chemistry of musk until the next lecture.

(To be continued.)

ON THE PATHOLOGY OF LEAD POISONING.

By Dr. EMPIS and M. ROBINET.

A great number of researches have been already made relative to lead poisoning, and its pathological effects on the human body, more especially on those parts of the body which had been most subject to its influence during life.

The results of such investigations up to this period have not, however, satisfied the question in such a way as to prevent future cavil; and as we have very recently had occasion to undertake certain inquiries on this subject, and our results having been at variance with those obtained some time since by M. Chatin, under analogous circumstances, we consider it a duty we owe to the medical public to publish our experiments and their results.

The individual upon whom our investigations have been prosecuted was fifty-five years old, he worked in a white-lead factory since the 1st of April, 1851. For the space of twenty-six days his health remained good; but on the twenty-seventh he suffered the first symptoms of lead colic, and, having presented himself to the Hôtel Dieu, he came under our notice.

The principal characters of the general condition of those suffering under lead poisoning already existed in a high degree. There was the plumbeous colour of the skin, of the conjunctiva, the teeth, and nails; fetidity of the breath, ill odour of the mouth, without either styptic or astringent taste; tongue slightly white, thirst moderate, diminution of appetite, belly moderately soft, but slightly contracted, dull pain in the whole of the abdominal region, becoming exasperated at irregular intervals, and slightly relieved by pressure; no stool since the evening preceeding, pulse 68, heart's action and sounds normal.

The organs of relative life maintained their complete integrity: the cutaneous transpiration had undergone no alteration; the organs of locomotion had not begun to suffer; the patient came to the hospital on foot, and was not conscious at the time that the muscular power of his legs had diminished, neither was there any perceptible lessening of power in the superior extremities.

The patient was treated by the *painters' purgative mixture of the Hôtel Dieu*, which, after two days' persistence in its administration, produced abundant alvine evacuations, after the occurrence of which the abdominal pains completely disappeared, the belly recovered its suppleness, the appetite returned, and on the fourteenth day the patient was already numbered amongst the convalescents.

On May 6, a period when the disappearance of every morbid manifestation might have given rise to the idea that the man was cured, a new series of symptoms developed themselves, and continued to increase until death.

About midday he became sad and silent; his appetite deserted him, and, without uttering a complaint, he took to his bed, closed his eyes, and appeared to be overcome with sleep. On being addressed he opened his eyes, and looked rather like a person arousing from a dream than otherwise. On being asked what was the cause of his chagrin, he denied being chagrined, and said he was very well. We examined him with care; he had no pain in the head, saw equally well with both eyes, his pupils were mobile, and moderately dilated. He understood all our questions, to which he replied with intelligence, but with a certain kind of resignation. His pronunciation was facile, and both sensation and motion remained intact. The accessions of colic had not returned, and his stools were regular; micturition was not difficult, and there was a total absence of fever—pulse 60. The only remarkable phenomena were the absence of appetite and a peculiar sadness. These symptoms remained until the night, at which time the patient suffered from an accession of violent delirium, during which he sprang out of bed, a prey to the most lively agitation, speaking loudly, and struggling violently with the attendants. After a few instants he became more calm, but soon after a new accession manifested itself, during which the convulsions became more violent, and, once set in, they remained until the morning, when we found the patient in the following condition:—Dead to all that was passing around him, he did not reply to a single question, and remained the prey to a violent agitation. His legs were bent upon the thighs and the thighs upon the abdomen; his muscular rigidity was considerable, and clonic convulsions accompanied this muscular contraction. The hands were clenched, bent upon the fore arms, and the fore arms on the arms. All our strength could not overcome this violent muscular flexion. The muscles of the trunk did not remain unaffected by the convulsive twitching; in fact, the trunk itself was curved as in opisthotonos, the head bent upon the chest, the sterno-cleido mastoid muscles rigid, strained, and projecting. The facial muscles did not participate in this convulsive affection, or, if a tension existed in them, it was too feeble to be observed. There was no trismus, and, from time to time, the patient opened his mouth to give utterance to some incoherent remark. When the patient was pinched or pricked he gave no manifestation of sensibility; his continued movements did not admit of feeling his pulse; the abdomen was hard, without meteorism; no evacuation; retention of urine, and but a small quantity was obtained by catheterisation.

The application of leeches to the mastoid apophyses and of sinapisms to the extremities, and the administration of purgatives, produced no alleviation of the convulsive state, which remained for the period of six or seven hours, and which was followed by profound coma, accompanied by resolution of members and complete insensibility, eyes fixed without expression, pupils dilated and immovable, no strabismus, involuntary alvine, and urinary discharge; respiration stertorous, pulse feeble—108. Death soon termi-

nated these symptoms, having occurred about thirty hours after the appearance of the first phenomena of sadness, which indicated the commencement of saturnine encéphalopathy. If post-mortem examination did not frequently fail to show us any indication of previously existing disease, we might reasonably have expected to find, on dissection, evidence of the disease we have narrated. Of these evidences, however, there were none; the sectio cadaveris which took place on the following day afforded us no pathological indications.

(To be continued.)

ON THE MANUFACTURE OF PROTOCHLORIDE OR MURIATE OF TIN, AND THE METHODS OF ASCERTAINING ITS COMMERCIAL VALUE.

(ADAPTED FROM PROFESSOR PENNY'S COMMUNICATION TO THE CHEMICAL SOCIETY.—*Quarterly Journal Chemical Society*.)

The protochloride of tin is readily made by dissolving tin in hydrochloric acid. The salt crystallises in needles, containing two equivalents of water, which are freely soluble in a small quantity of water, but are apt to be decomposed in part, when put into a large mass, unless hydrochloric acid in excess be present.

The mistake of most authorities, in assigning three equivalents of water, has doubtless arisen from the great difficulty of obtaining the crystals in a state of perfect dryness. The methods commonly employed for drying saline substances are not applicable to this salt, in consequence of the extreme facility with which it becomes altered, especially by heat and contact with the air; over oil of vitriol it becomes anhydrous.

In crystallising this salt on the large scale, two sorts of crystals are generally obtained. The one sort is frequently found deposited on the sides of the mould or crystallising basins, and the other is usually formed in the central parts of the solution. The former are bold rhombic prisms, and are frequently coarse and lumpy, when they have been mistaken for alum; the latter are exceedingly delicate and acicular, with a peculiar silky lustre, for which they are preferred. These may be obtained of great beauty by cautiously crystallising the mother liquor from a crop of the tin salt.

There is another variety of the crystals of this chloride, which occasionally proves troublesome to some manufacturers. It consists of extremely thin and nacreous scales, and is generally observed to form when old liquors, which have been much exposed to the air, are in process of being worked up.

Professor Penny, of the Andersonian University, Glasgow, made several attempts to purify commercial crystals of tin by re-crystallising from distilled water, acidulated with hydrochloric acid, but the process on the small scale was very unsatisfactory, and almost impracticable. After trying other methods he was led to adopt rather a novel mode of purification, which, by a little practice, yielded crystals both pure and dry. In the course of his experiments upon ordinary crystals he frequently had occasion to observe the very low temperature at which they liquefied on the application of heat; and, not finding any definite statement with regard to this point, he made it the subject of particular examination.

A quantity of crystals were cautiously heated in a small flask, arranged in a water-bath, with a thermometer in the water, and the bulb of another in the chloride. The experiment was commenced at 60° Fah., and the successive results carefully watched. At 90° the salt began to soften, at 100° it was partially liquefied, and at 105° it became perfectly fluid. Being then allowed gradually to cool, no change was observed until the temperature had fallen to 90°, when crystallisation commenced, and the temperature rose rapidly to 105°, at which point it was for some time stationary. It afterwards slowly descended until it had again reached 90°, when congelation was perfect. He repeated this experiment several times with very nearly the same results.

The production of crystals of chloride of tin by this pro-

ness is an exceedingly beautiful example of crystallisation. The fused salt does not become confusedly solid, as is generally obtained with saline substances, nor is there a crust formed on the surface if the fluid is preserved from agitation, and from the too rapid abstraction of heat by contact with the air. Large and well-defined prisms, frequently more than an inch in length, shoot in a radiating form from the sides of the vessel, and as soon as a good crop has been deposited the remaining fluid may be poured off, and the crystals left of sufficient hardness and strength to be preserved.

This compound is extensively employed by dyers and printers, under the name of "crystals, or salt of tin," and "single" and "double muriate, of tin." The first is the salt in its crystallised state, and the others are solutions of it in water, with excess of hydrochloric acid. The consumption of these articles is very considerable. In Manchester alone the production of "crystals of tin" is not less than from 250 to 300 tons per annum; and in Glasgow, from 150 to 200 tons are manufactured in the course of a year.

These preparations of tin, being somewhat higher in price than many other preparations used by the dyer and printer, are liable to be adulterated by the makers, as well also as contaminated by accidental impurities. Metallic zinc was at one time freely added in the process of dissolving the tin in hydrochloric acid, not only as a substitute for the more expensive metal, but because it assisted, as many believed, in giving to the crystals that peculiar pearly or silky lustre for which they are usually esteemed. Minute quantities of arsenic, sulphates, common salt, and muriate of magnesia, have also been detected in this salt. The principal adventitious matters, however, usually contained in the crystallised chloride are water and excess of hydrochloric acid, arising from imperfect drainage of the crystals. This is particularly the case with fibrous or feathery crystals, which have the power of retaining mechanically a considerable proportion of the mother liquor.

The value of these preparations, as respects the several purposes to which they are applied in the tinctorial arts, depends evidently on the amount of tin they contain, it being also essential that the metal should exist exclusively in the state of protochloride.

A simple process for estimating the quantity of tin in commercial samples of these articles has long been a desideratum among practical men. The common method for the determination of tin, by the agency of nitric acid, is quite inapplicable to the analysis of the protochloride, as during the necessary ebullition a considerable proportion of bichloride is formed, which from its ready volatility would be expelled in the course of the subsequent evaporation, thereby involving a serious loss. Another method, capable of giving very exact results, consists in precipitating the tin by metallic zinc, and afterwards converting it into binocide; but these operations are much too tedious, and involve too many nice manipulations, to be available for general purposes. The process by sulphuretted hydrogen is, for the same reasons, even more objectionable.

Several centigrade methods have also been recommended for the solution of the same problem. M. Cotterau tried to estimate tin in solution of chloride of tin by colouring it with sulphate of indigo, and afterwards adding a solution of chlorine until the indigo was bleached. A somewhat similar attempt was long since made by Pelouze. Gaultier de Claubry proposes a normal solution of iodine in alcohol for the same purpose; and for a series of experiments to be made, without much time intervening, there can be no doubt that this mode will give very satisfactory results. It is, however, well known that alcoholic solutions of iodine become materially changed by keeping; and, as it would therefore be necessary to test the normal liquid previous to each application, this method is, to a certain extent, unsuitable for common use. Méné has very recently suggested the employment of sesquichloride of iron for the analysis of proto-compounds of tin, and has reported very favourably of the trials he has made.

The agent proposed by Professor Penny is bichromate of potash, a normal solution of which is added to a known

quantity of the chloride of tin dissolved in water, until, on being tested with a solution of acetate of lead, a slight excess of the chrome salt is indicated by the production of yellow chromate of lead. The amount of metallic tin is then deduced from the quantity of bichromate of potash consumed. The following is the mode of proceeding recommended by Professor Penny, to estimate the value of any given sample of "crystals of tin."

This salt is usually sold to the printer in jars, containing from two to three hundred weight each. A fair sample, which should not be less than one or two pounds, is taken from the bulk, and triturated in a mortar until thoroughly mixed. Very frequently this operation requires considerable attention, as the crystals, in consequence of their dampness, are apt to cake under the pestle; 100 grains are then weighed out, put into a basin with 2 oz. of water and $\frac{1}{2}$ oz. of hydrochloric acid, and the mixture gently heated; 83.2 grains of bichromate of potash are next dissolved in about 2 oz. of tepid water, and the solution carefully transferred to an alkalimeter of 100 measures, which is filled to the top line of the graduations by the addition of water, and then inverted on the palm of the hand for the purpose of rendering the liquid uniform throughout. This quantity of bichromate of potash is exactly equivalent to 100 grains of pure metallic tin; and hence each measure of the alkalimeter will be equivalent to 1 grain of the metal.

The alkalimeters in common use for centigrade analysis are generally made of such a capacity that 100 measures will contain exactly 1000 grains of water; but for the present process it is much more convenient, as well as more conducive to accuracy, to have the instrument of double this capacity, so that the 100 measures will hold 2000 grains of water.

A solution of acetate of lead, which, to avoid a repetition of words, is called the "lead-test," is spotted over a white porcelain slab, placed conveniently for testing the tin solution during the next operation. It should contain at least 1 oz. of the acetate to 8 oz. of water, and should be rendered clear by filtration. The spots on the slab must be pretty large, in order to ensure excess when mixed with the chloride of tin.

The prepared solution of bichromate of potash is now poured very cautiously into the tin solution, as in the well-known process of alkalimetry, until a drop of the latter, taken out on the end of a glass rod, and applied to the "lead-test" on the slab, gives a faint yellow tinge. The operation is now finished. The number of measures of the chrome liquor consumed is carefully read off, and this number indicates the amount of tin in 100 parts of the sample.

It may be as well to mention here the effects produced during the foregoing operation. On the first addition of the chrome liquor to the tin solution, sesquichloride of chromium is formed, which gives to the mixture a rich green colour, and if, at this stage of the process, a drop be applied to the lead-test, a white precipitate of chloride of lead will appear. These effects continue to be produced until all the protochloride of tin is converted into perchloride: but when this result is accomplished, and there is the smallest excess of bichromate of potash, the lead-test gives the yellow chromate of lead simultaneously with the colourless chloride, and thus communicates the yellow shade, which indicates the completion of the process.

When it is requisite to be very exact, it is recommended that 40 grains of bichromate of potash, dissolved in water, should be added to the tin solution, and that the alkalimeter should be made up with only 10 grains of the chrome salt. The remaining part of the process is conducted according to the directions previously given. By this modification it is very easy to limit the excess of chrome liquor to half a measure of the alkalimeter, which is equivalent to .05 grains of the salt.

Instead of the lead test Professor Penny sometimes uses another, formed of sulpho-cyanide of potassium and proto-sulphate of iron dissolved together, and slightly acidified with hydrochloric acid. A white slab is spotted over with this solution, as in the case of the lead-test, and the moment the conversion into perchloride is complete, and there is the least excess of chromic acid in the solution, a dark brown or

red coloration is produced, the depth of the colour depending entirely on the proportion of chromic acid present. This mixture, which Professor Penny terms the "sulphocyanide test," is an exceedingly delicate re-agent; one part of bichromate in 10,000 is easily discoverable, even when the solution is coloured with sesquichloride of chromium; and, with pure water, one part in 20,000 may be detected.

In estimating the value of any given sample of "single muriate," or "double muriate of tin," Professor Penny recommends the following process to be followed out:—500 grains of the sample, whether "single" or "double muriate," are poured into the alkalimeter, and sufficient water added to fill the instrument to 0°, the two liquids being well mixed by agitation. 41·6 grains of bichromate of potash are dissolved in a basin, with 2 oss. of warm water, and $\frac{1}{2}$ oz. of hydrochloric acid; and into this mixture the tin solution is poured from the alkalimeter in small successive portions, until, on bringing a drop of it into contact with the "sulphocyanide test," previously spotted on a slab, no red or dark colour is seen to be produced, or yellow if the lead-test be employed.

The number of measures consumed is read off, and, on dividing 1000 by this number, we obtain the proportion of tin in 100 parts of the sample.

In a particular experiment with a specimen of "double muriate," of the specific gravity 1·600, it was found that, with 500 grains in the alkalimeter, 41·6 grains of the bichromate required 35 measures, which give 28·57 per cent. of tin. With a sample of "simple muriate," specific gravity 1·422, 47·6 alkalimetric measures were consumed, equivalent to 21 per cent. of tin.

In all these processes the bichromate of potash employed must be perfectly pure. As usually sold, it is quite unfit for the purpose, in consequence of a large admixture of sulphate of potash; it may, however, be easily purified by two or three crystallisations. Previous to use it should be finely powdered, and heated to incipient fusion.

The facility with which "crystals of tin" melt on exposure to heat shows the necessity of keeping the stock in a cool store, away from the fires and stoves. An absurd practice prevails at some print works of placing the jars containing the crystals in rooms artificially heated, so that in a very short time a part of the salt is liquefied, and collects as a sort of sludge at the bottom of the jar, entailing not only a loss of the article, and perhaps damage to the goods, but too frequently unmerited censure upon the maker. This article is well known to be one of the most delicate chemical salts used in the tinctorial arts. From its extreme liability, when damp, to change by keeping and contact with the air, it obviously requires to be used as soon as possible after it is made, and to be kept in carefully closed vessels. Its purity, perhaps, would also be much better preserved were it sold in jars of smaller size than those in common use.

COMMERCIAL MANUFACTURE OF SULPHATE OF COPPER AND SULPHATE OF IRON, AND THEIR EMPLOYMENT IN THE ARTS.

(Continued from page 201.)

Large quantities of sulphate of copper are manufactured at St. Helen's, Lancashire, by the process patented by Mr. Longmaid.

This process is in some respects analogous to that of Mr. Bankart, which we have previously described. A mixture of copper ore (sulphuret) and common salt is exposed to the united action of air and heat; mutual decomposition ensues, with the production, amongst other results, of sulphate of soda and chloride of copper. To the solution of chloride of copper metallic iron is added, by which means copper is precipitated, and chloride of iron remains in solution. The copper thus obtained is oxidized, and converted into sulphate of copper.

Amongst the various uses in the arts to which sulphate of copper is applied, we may mention the manufacture of emerald green, Brunswick green, and other pigments exten-

sively used by the artist, the house-decorator, and the paper stainer.

EMERALD GREEN, OR SCHEEL'S GREEN, is a compound of protoxide of copper and arsenious acid. To obtain this pigment, warm solutions of either arsenite of potash, or arsenite of soda (formed by boiling the white oxide of arsenic in a solution of potash, or of soda), and sulphate of copper are mixed, until any further addition ceases to throw down a green precipitate. The addition of strong acetic acid to the mixed solutions is necessary to bring up the colour.

COMMON BRUNSWICK GREEN is formed by mixing together solutions of cream tartar and sulphate of copper; a green precipitate is thus obtained.

PAUSSIEN BROWN is readily obtained by adding a solution of the yellow prussiate of potash (ferro-cyanide of potassium) to a solution of sulphate of copper; a very deep brown mass is then thrown down, which, when carefully washed and dried, forms a brown colour, in no respects inferior to the madder browns, and possessing far greater permanency. The tint may be considerably varied, by mixing the solutions at different degrees of temperature. This pigment offers to the artist so many advantages, that its employment is particularly recommended.

On the varied application of sulphate of copper in the operations of dyeing and calico printing we need not enlarge, nor on its employment in the process of electro-typing.

With respect to the application of sulphate of copper to the prevention of the smut of wheat, there can be no doubt that this salt is the most effectual that can be employed; it is superior to arsenic, and other substances which have been tried.

In the years 1843-44-45, some experiments were made on a very extensive scale near Rouen, under the superintendence of Professor Girardin, and the results obtained satisfactorily demonstrated the complete success attendant on the use of sulphate of copper.

The addition of common salt appears to increase the efficacy of the sulphate. The grain is steeped for a certain time in a solution of the sulphate, then dried, and sown in the ordinary way.

(To be concluded in our next.)

PROGRESS OF SCIENCE AT HOME AND ABROAD.—TRANSACTIONS OF SOCIETIES, COMMUNICATIONS, &c.

PARIS ACADEMY OF SCIENCES.

Sitting of October 13.

ON THE ANALYSIS OF MANURES.

By M. JACQUELAIN.

M. Jacquelin having had occasion to make several analyses of so-called concentrated manures, adopted the following process:—

1. Twenty grammes of the pulverised manure were digested with boiling ether, the solution filtered and boiled to dryness on a sandbath; traces of the fatty matter of blood and of resin soap were thus obtained.

2. The manure, after being completely exhausted by the ether, was submitted to the action of alcohol at 38°, and this treatment repeated four times, with alcohol at 50°; all the nitre was removed with a little chloride of sodium and animal matter; the solution was then evaporated to dryness in a water bath, a small quantity of water and carbonate of soda added, and the whole boiled for two minutes to drive off the ammonia, then super-saturated with hydrochloric acid, and decomposed after concentration by an alcoholic ethereal solution of chloride of platinum; the exact quantity of the potash of the nitre is thus obtained. If ammoniacal salts be present, the ammonia must first be driven off by means of pure caustic soda, and estimated by means of a standard solution of sulphuric acid, in an apparatus to be afterwards described; after this estimation of the ammonia

" Now, upon comparing the results of our analysis with those just given, it will be seen that, although the expressed cake of the Ricinus is certainly not so rich as many there named, still the proportion of fertilizing ingredients it contains is far from being contemptible. And, if it be true, as MM. Boussingault and Payen assert, that the value of a manure is in direct proportion to the quantity of phosphoric acid and nitrogen it contains, then there can be no doubt that the *Jatropha* manure will ultimately prove a most useful and valuable fertilizer. No experimental trial, however, so far as I am aware, has been made with it, and consequently

we do not as yet know how far experiment will bear out the deductions of science.—I remain, sir, your obedient servant—

"THORNTON J. HERAPATH.

"Mansion-house, Old Park, Bristol."

MISCELLANEOUS NOTES FROM EUROPE.

By B. SILLIMAN, Jun.

1. PRESENT CONDITION OF VESUVIUS.

The eruption of Vesuvius, in February, 1850, and that of the year previous, entirely changed the summit features of this ancient mountain of fire. The former crater disappeared, being filled with scoria and ashes, while two craters now occupy the summit of the cone. The deepest and most active of these is that of February, 1850, which is situated on the side of the cone nearest to Pompeii. It is somewhat lower and has a much greater depth than its immediate neighbour, which is on the side of the bay of Naples. We had no means of measuring its depth accurately, but, judging from the time required for the returning sound of a stone cast into its mouth, as well as from inspection and comparison, we assumed the depth of the new crater to be from 800 to 1000 feet. It is acutely funnel-shaped, at an angle of not less than 50°. It is impossible, because of the steam and vapours of sulphurous acid, to see its bottom, even if not prevented by the danger of the descent to a position where one might hope to catch a glimpse of it. Its activity at present is confined to the emission of vapour, and even this seems at times, when viewed from the sea, to be wanting. On the summit, however, these vapours appear dense enough, and are sufficient to prevent the possibility of making the entire circuit of the crater. From this cause we were unable to examine the lip dividing the crater of 1850 from its neighbour. The observer is much struck not only with the change of form in the summit, as shown by the drawings of Professor Saechi, but also with the sharpness of the lip of both craters, which is such that it is hardly possible for more than two persons to stand abreast upon it. During the late eruption the lava found vent from the base of the cone on a level with the sand plain which fills the ancient crater of Somma. It here poured out a torrent of scoriaceous red lava, through a well-defined canal. This is now entirely cold, and we collected from its sides abundant specimens of apophyllite, which frosted over the rugged cavern like snow. Near this spot are also two fumeroles formed during the last eruption, the largest about 25 feet high, with an aperture of near 10 feet, its outer walls black, rugged, and forbidding. The flow of lava from the eruption of 1849 was in the direction of the ancient Pompeii, and it was copious enough to destroy a small village, with its vineyards, at the distance of several miles. The King of Naples has since erected a new village for the unfortunate inhabitants near the site of the former one.

During the past six years the King of Naples has also constructed a carriage road up the side of Vesuvius as far as the Hermitage, where he has a Royal Meteorological Observatory, under the direction of the celebrated Melloni. This road follows in a very serpentine path over and around the hill of ashes, which all who have seen Vesuvius will remember as forming a remarkable feature in its topography. In this manner sections have been opened in the hill for a distance of three or four miles; and, were these viewed without reference to the immediate proximity of the volcano which has produced the deposit, it would be easy to refer the whole to an alluvial origin, so characteristic are the undulating lines of deposition, the alternation of coarse and fine materials interstratified, including now large angular masses of rock, and again graduating into the finest silt and mud. In some places the lines of deposition are curved in regular undulations, and in others they meet at a sharp uncomfortable angle. Close observation alone detects that the whole material is volcanic—pumice, scoria, sand, and fine dust, including large blocks of inflated lava and tufa.

It is impossible to see any difference in the general character of these deposits and of those which cover Pompeii, only that the latter, being mostly the result of one eruption,

are less varied than the former, and more regularly stratified. In both, the evidence of aqueous action is very obvious; and we have historical as well as geological evidence of the eruption of vast volumes of aqueous vapor with the lapilli, scoria, and fine ashes from Vesuvius, which, condensing into rain, produced a deluge of hot mud, filling the most intricate recesses of the Pompeian houses, and producing the appearance of an aqueous deposit in the ash hills of the flanks of Vesuvius. In Herculaneum we see the same phenomena in a more remarkable manner. Here, owing to a much larger accumulation of material, to subsequent overflows of lava, and the superincumbent weight thus produced, with the aid of water, the ashes were consolidated into so compact a mass, that some writers have even doubted whether Herculaneum had not been destroyed by an overflow of lava in the first instance. That such was not the fact is well known, and the condition of the antiquities embedded there quite forbid the idea, were no other evidence attainable.

2. GROTTO DEL CANE AND LAKE AGNANO.

The Grotto del Cane, or dog grotto, has been so much cited for its stratum of carbonic acid gas covering the floor, that all geological travellers who visit Naples feel an interest in seeing it. Unfortunately, like some other grottoes, its enchantment disappears on a near view. It is a little hole dug artificially into the foot of a hill facing Lake Agnano. The aperture is closed by a door, and the space within is barely sufficient for one person to stand erect. Into this narrow cell a poor little dog is very unwillingly dragged, and placed in a depression of the floor, where he is soon narcotised by the carbonic acid. The earth is warm to the hand, and the volume of gas given out is very constant. Such is the world-renowned Grotto del Cane, which, if it did not equal our anticipations, at least afforded us the opportunity of some merriment!

Lake Agnano, as is well known, fills the bottom of an ancient crater, whose walls are still distinctly to be traced. On the shore of the lake immediately opposite the Grotto del Cane there is a constant and copious discharge of carbonic acid, and the water of the lake at that part is in great agitation from its escape. Nor is other evidence wanting of the present operation of the ancient causes which have characterized this region. At the foot of the hill on the east are numerous vents of steam and sulphur. Over some of these, vapour baths (sudatoria) have been established, which are held in some repute in cases of rheumatism. Digging a short distance into the hill, near the ruins of the villa of Lucullus, it is easy to perceive the presence of volcanic energy in the hot vapours, accompanied with sulphur, which issue copiously from the surface. The villa of Lucullus was entirely buried in lapilli and volcanic ashes, proceeding, as is supposed, from a vent in the immediate neighbourhood; but from which vent does not appear—evidently not from the one now containing Lake Agnano, since that has not been active in the historic period.

In another cavity excavated in the hill near to the Grotto del Cane, is an abundant flow of carbonic acid, accompanied as is said by ammonia; but we did not perceive any odour of this gas, nor any deposit of carbonate of ammonia or of sal-ammoniac on the walls of the place.

3. SULPHUR LAKE OF THE CAMPAGNA, NEAR TIVOLI.

The celebrated sulphur lake of the Campagna, near Tivoli, the *Aque Albulæ* of the ancients, still retains its interest to the geologist, as the most remarkable of all the thermal sources of Italy. Whether we regard the constancy of the flow from it both of water and of gas, the area of the lake, or the important part which it and similar craters appear to have played in the formation of the travertine of the Campagna, we must admit that it is worthy of attentive consideration.

In the days of Father Kircher this lake was described as being over one mile in circuit. Now the lake is not over 500 or 600 feet in diameter, and its area is constantly diminishing. The baths of Agrippa, which are now at a short distance from the shore, show the extent to which this contraction has taken place in that direction, since they were erected in the waters of the lake, which were much esteemed by the ancient Romans for their hygienic effects. These

baths were frequented by Augustus and enlarged by Zenobia; the latter spent her Roman servitude in Tivoli, and, in allusion to this, they are still called "Bagni della Regina." At present the waters are conducted from the lake by a canal artificially cut in the travertine by Cardinal Ippolito d'Este, former governor of Tivoli, for a distance of two miles. This canal is nine feet wide and four feet deep, and there is a constant discharge of the surplus waters through it in a very rapid current, the volume of which is remarkable when we notice the small size of the source.

The strong odour of sulphuretted hydrogen announces the existence of this lake a long time before the traveller reaches it. The water was examined by Sir Humphrey Davy, who found it to contain one volume of carbonic acid, and less than half a volume of sulphuretted hydrogen. Tracing the canal from where it escapes the "Via Appia Nova" up to the lake, a mile and a quarter, the observer is much struck with the copious escape of large volumes of gas from the whole surface of the lake, which is such as to convey the idea of ebullition. A stone cast into the water is soon followed by a very violent escape of gas, causing the whole adjoining area to boil with great energy, and a loud sound of effervescence. The water is very clear, a slight milky or opaline appearance it has being due, as we thought, to the reflection of the white sides and bottom of the lake. Its temperature is 80° F., and it has, when drank from a glass, an agreeable pungent taste of free carbonic acid, with no more of sulphuretted hydrogen than is pleasant. It is perfectly clear in the glass, and effervesces briskly. The escape of gas does not appear to be confined to any particular part of the bed of the lake, but takes place equally over all its surface. The grass and reeds which grow luxuriantly at its margin are constantly encrusted with carbonate of lime from the water, and it is from this cause that the area of the lake appears to have been contracted, and not from any partial drainage, which is evidently inexplicable, since the level of the lake is now only a few inches below that of the adjoining and level Campagna. Breaking off a mass of grass and clods from the shore, it was found that the roots of the plants were also encased, while the stone walls of the fields adjoining were wholly composed of loose blocks of travertine plants. It required but casual observation of the travertine in other and distant parts of the Campagna to detect the same species of plants embedded in every part of its mass. Blocks of travertine in the Coliseum at Rome and other ancient buildings also showed us the same evidence. A large space on the Campagna near the sulphur lakes lately fell in, owing to the cavernous and unsupported nature of the rock, and it was easy to see in the freshly-fractured portions of the rock the same stems of aquatic plants, such as now grow on the margin of the water.

It is perhaps too much to infer from these casual observations so wide a deduction as that all the travertine is due to this origin from sulphur waters, charged with bicarbonate of lime; but it is not going farther than is allowed by a prudent philosophy to say that travertine is now forming on the shores of Lake Solfatara from this cause.

4. METEOROLOGICAL OBSERVATORY OF MOUNT VESUVIUS.

The Meteorological Observatory recently erected at Mount Vesuvius was projected by Prof. Melloni, so well known to all the world by his memorable researches on heat, and the most distinguished of all the Italian physicists. The King of Naples gave the enterprise his sanction, and furnished the means to construct the building. The house is of ample dimensions, standing on an artificial terrace, at the summit of the hill of ashes which forms the limit of the arable region of Vesuvius, and at an elevation of about 2000 feet. The centre has three floors above the basement, and the two wings each one floor above the basement; in the rear and joining the main building is a round tower, and the roofs are conveniently arranged for meteorological purposes. All the plans were furnished by Prof. Melloni, who also superintended its erection, which, by an inscription on the exterior, appears to have been begun in 1841.

Unfortunately for science, the revolution in 1848 entirely arrested the farther progress of the undertaking; the house stands vacant, no instruments are provided, and, worst of

all, Prof. Melloni has been removed, not only from his direction in the Observatory, but also from his professorship in the University, under the caprice of a despot who knows no law but his own will, and who has shown in this act that he was unworthy of so noble a subject.

5. LIGHT FOR ILLUMINATION OBTAINED FROM THE BURNING OF HYDROGEN. BY M. GILLARD.

We have had an opportunity of seeing the successful application of M. Gillard's patent in the extensive silver plate works of Messrs. Christolef, in Paris. It is well known that M. Gillard claims the production of a useful light and great heat from the combustion of hydrogen in contact with a coil of platinum wire, the hydrogen being produced by the decomposition of water. The apparatus employed is very simple, and consists essentially of one or more cylinders of iron, arranged horizontally in a furnace similar in all respects to the usual arrangement for the production of coal gas. The retorts are charged with wood-charcoal, reduced to small fragments of uniform size, and heated to an intense degree. Through each of the retorts steam is conducted in a tube pierced with numerous very minute holes, so disposed as to distribute the steam in a uniform and very gradual manner over the heated coal. The boiler for the production of the steam is conveniently situated in the same furnace employed for heating the retorts. Decomposition of water ensues of course, accompanied with the production of carbonic acid (CO_2), carbonic oxyd (CO) in small quantity, of free hydrogen, and a limited quantity of light carburetted hydrogen gas (C_2H_4). The mixture of these gases is conducted through a lime purifier, to remove carbonic acid, and, without farther washing or purification, the product is ready for use. Consisting almost wholly of hydrogen gas, the flame of its combustion is of course very feebly luminous; to obviate this difficulty, it is burned in contact with a cage or net work of platinum wire gauze, surrounding an ordinary argand burner, protected by a glass chimney. This simple contrivance (so well known in the lecture-room) is perfectly successful, and the light given out from gas lamps of this construction is extremely vivid and constant.

This invention claims the following advantages in practice:

1. The gas so produced is cheaper than any other mode of artificial light, costing, as is asserted by M. Gillard, and sustained by the ample experience of M. Christolef, only about 1-16th the average cost of coal gas.
2. The gas has no unpleasant odour, being entirely free from the volatile hydrocarbons which are so peculiarly offensive in oil and coal gas.
3. The products of its combustion are almost solely water, so little carbonic acid resulting in the combustion that practically it may be disregarded.
4. This mode of producing gas may be applied to any existing gas works by a slight modification of the retorts, and without any essential change in other portions of the apparatus, the platinum cages being applied to the argand burners.
5. The cheapness of this mode enables us to apply it with great advantage as a fuel for cooking, and for numerous purposes in the arts. For example, we saw in the establishment of M. Christolef, the soldering of silver plate accomplished in a rapid and remarkably neat manner by a powerful jet of this gas, driven by a pneumatic apparatus. Its perfect manageableness, the ease with which an intense heat is applied locally and immediately when it is wanted, coupled with advantages of employing for such a purpose so powerful a deoxidising agent as hydrogen, render this mode of soldering preferable to every other, and peculiarly suited for the process of autogenous soldering.
6. The nuisances resulting from the presence of large coal gas works in populous districts are entirely avoided by this mode, which is as free from objection as a steam engine.
7. The arrangements are so simple and inexpensive, that every establishment where it is desired to employ light and heat may erect its own apparatus, even in the most isolated situation, all the materials employed being everywhere accessible.

It is understood that M. Gillard has secured his patent in the United States, and it is presumed that his method will soon be practically tested there.

We merely add that the result of M. Gillard's invention in one particular differs from the anticipation of chemists: that

is, we should expect from the decomposition of water in this mode the production of carbonic oxyd CO , carbonic acid CO_2 , and light carburetted hydrogen C_2H_4 , with a limited amount of free hydrogen. The result of his experience, however, seems to establish the statements already made, as may be seen in a report of the Commissioner of the Society for the Encouragement of Industry, &c., to whom the subject was referred.

Chemical Record

AND

DRUG PRICE CURRENT.

SATURDAY, OCTOBER 25, 1851.

ON the first intimation of our determination to furnish the readers of the *CHEMICAL RECORD* with reports of Dr. Pereira's lectures, that gentleman somewhat inconsiderately, as events have proved, threatened not only us, but also those friends who kindly furnished the necessary reports, with the most summary vengeance of the law. Slight reflection having demonstrated to that gentleman the impotency of his menaces, he now adopts the other course of appealing to the sympathies of ourselves and friends.

Before discussing the extent to which we may feel ourselves inclined to modify our original intentions, in deference to Dr. Pereira's pleas of sympathy and propriety, we cannot help pointing out the anomalous transposition which the two great arguments of *law* and *propriety* have received at Dr. Pereira's hands.

When a difference of opinion unhappily arises between two persons or two interests—a difference which it may be desired to bring to the issue of a speedy settlement—we had hitherto imagined that sentiments of honour and propriety were appealed to in the first instance, and law in the second. Dr. Pereira has acted disaccordantly with the common usage, and reversed the order of appeal; whether he has increased his reputation, or advanced his interests thereby, the readers of the *CHEMICAL RECORD* may judge for themselves.

Now, with regard to the legality of our reports, we are advised that there is no doubt; and, strong in a belief of the soundness of our professional advice, we should have told Dr. Pereira, had he limited himself to the ultima ratio of law, that not only would his lectures regularly appear, but that so little did we suffer from the paltry refusal of himself and the Pharmaceutical Society to sell our reporter a student's card, that a dozen gentlemen, at least, of Dr. Pereira's materia medica class would, if necessary, have furnished us with reports.

In deference, however, to Dr. Pereira's appeal to our honour and propriety, out of respect to the arguments he advances in support of the position that his lectures should not appear, we will not thus abruptly intimate the course we mean to pursue. Although Dr. Pereira has inverted his appeals in a manner that is not calculated to bespeak our courtesy, that courtesy nevertheless shall be extended to him; let us see then what moral pleas Dr. Pereira advances in support of the position he is pleased to assume.

In his address to the gentlemen of his class on Saturday last, the lecturer, after enlightening his audience on the law

of the case, offered various moral reasons wherefore a report of his lectures should not appear in our pages. The lecturer's arguments may be regarded as an expanded and remodelled version of those adduced in his behalf, and ostensibly with his concurrence, at the committee meeting on Thursday, October 16.

On this occasion it was advanced, in the first place, that the publication by us of these lectures was improper on account of the language in which they were delivered, being specially adapted for oral communication, and not fit to appear in print.

In the second place, that the publication of these lectures in our journal would prejudice the sale of Dr. Pereira's coming book.

To a consideration of these objections we shall limit our remarks, merely premising, that they are slightly at variance with Dr. Pereira's objections propounded on Saturday last, and that they do not foreshadow the great fear Dr. Pereira professes to entertain of the College of Physicians, because of his adverse remarks on certain processes of the Pharmacopœia.

Self knowledge, the proverb informs us, is the first step towards amendment. It is satisfactory to find that Dr. Pereira has arrived at a knowledge of his prevailing faults. If he is conscious of using language either coarse or ambiguous (and we are sorry to say he occasionally is guilty of both), the better plan would be to remedy these defects, so that his teaching might go forth pure and unalloyed to the world. The greatest enemy of the Pharmaceutical Society could hardly have said anything so damaging to its interests as is furnished by Dr. Pereira's own accusation.

Pass we on, then, from Dr. Pereira's first appeal to his second, wherein we are told that the publication of his lectures will interfere with the sale of his coming book, of which the lectures are but the advanced lines. Need we trouble the reader by addressing his attention to the fact, that Dr. Pereira's objection either applies to the words of his lectures, or their subject matter, or to both. Now, as to the words, we have been informed that they are exclusively adapted for oral communication, and are *altogether unfit to appear in print*; clearly, then, the objection is narrowed to a comprehension of the matter, not the words. But what is this matter? Simply the industrious gleanings of a compiler, extracted from numerous pharmaceutical works. Surely there is nothing in such a condition to enlist our sympathies on the side of Dr. Pereira; nay, even if his powers extended beyond the narrow sphere of laborious compilation, into those realms of original investigation, to the very confines of which he is a stranger, Dr. Pereira would have no moral claim on our forbearance for withholding the publication of his lectures.

Had this gentleman been in the position of a gratuitous lecturer, his moral claim might have been advanced with some show of propriety on its side: but it must be remembered that Dr. Pereira is profusely paid for his connection with the Pharmaceutical Society; that, without the necessity, he has earned for himself the character of an avaricious man—wrapped up in his own self-interest, and isolated from his fellow men, save when the golden links of interest come between.

Dr. Pereira, we say, is profusely recompensed for his

lectures by the guineas of those for whom he never evinced disinterested feeling yet; and every gentleman, at least, who has paid his money to call himself a member of the Pharmaceutical Society, may justly claim possession of Dr. Pereira's lectures as a right.

Having thus discussed our right of publishing these lectures, under the two aspects of legal and moral propriety, we can only arrive at the conclusion, that, far from overstepping the boundaries of either, this publication is imposed on us as a duty we owe to the pharmaceutical profession, whose interests it is our pride and our pleasure to advance. The lectures will therefore continue to appear; and we trust further reflection will demonstrate to Dr. Pereira and his colleagues the odium which will attach to any further attempts at repressive efforts on their part—attempts which will be no less futile than offensive.

In reading the official announcement of the marks of royal favour about to be extended to the gentlemen who, without remuneration, have laboured to promote the interests of the Great Exhibition, we regret to find a painful deference paid to an illiberal routine, in a way that little redounds to the credit of her Majesty's advisers.

The *Times*, in announcing to us the advancement of Dr. Cole, Dr. Playfair, and Sir Stafford Northcote to the distinction of C.B., comments on the propriety of this mode of displaying royal favour, because many circumstances have tended to lower the dignity of knighthood; as an illustration of which circumstance Mr. Dilke has declined the honour, although it will be accepted by Messrs. Paxton and Fox.

Immediately following this announcement of royal favour, the editor of the *Times* regrets that Mr. Dilke should be deemed ineligible to the honour of C.B., on the ground of his never having been in the civil service of the crown.

We cannot conceive a more expressive commentary on our system of honorary rewards than that conveyed in the paragraph of the *Times* to which we have drawn attention. In the first place, we have it propounded that knighthood is a degraded title; next we are informed that Messrs. Paxton and Fox are to be honoured by this degraded title; and, finally, a very just regret is expressed that Mr. Dilke cannot participate in the honour conferred on his co-associate, Mr. Cole.

With regard to those gentlemen who have felt willing to accept the dignity of Knight Bachelor, we desire to say nothing that may prejudice the title in their eyes. If they are gratified, others need not complain. We cannot but think, however, that Mr. Dilke exercised a very creditable degree of self respect in declining to ally himself with a confessedly degraded titular class.

It is to the narrow conditions under which the Sovereign is empowered to grant the honours of the Bath that we desire specifically to direct the reader's attention. In the year 1847, a great deal of liberal exultation was lavished on account of the expansion of the honour of the Bath, so as to comprehend the civil as well as the naval and military services. Men of literature and science, it was argued, would henceforth receive a recognition more consonant to their feelings than that of common knighthood; the principle that arts

of peace were worthy of honourable reward would be acknowledged before all the world.

But what is really the fact? This extension of the honour of the Bath is not, as Mr. Babbage pointed out, designed to meet the case of men of literature and science, specially because of their acquirements, but because they may have happened to fill a place in the civil service of the crown. Instead, then, of conferring the advantages it professed to do, this arrangement merely gives increased power of patronage to a Government to reward the civil servants of the crown.

That such would be its effect has long been evident; but we did not expect to have so speedily brought before us a case of injustice equalled by the exclusion of Mr. Dilke from a participation of honour bestowed on Mr. Cole. Far better to leave men of literature and science to their own self-made honours and rewards, than to hurt their feelings by oblique measures like this. A man is not the more intellectual—the better—the wiser—the more worthy of honour, because he happens to discharge or to have discharged the functions of a servant of the crown.

TO OUR READERS.

THE painful embarrassment in which our journal might have been placed by the illiberal efforts of Dr. Pereira, and a certain portion of the Pharmaceutical Society's Council, has elicited a profusion of friendly testimonials and offers of assistance, for which we shall ever be grateful and proud.

These kindly manifestations, our friends may rest assured, will not be lost upon us, but will stimulate us to increased exertions and further solicitude for the advantage of those whose interests we consult.

THE CHEMICAL RECORD will never consent to be the instrument of an oppressive monopoly; but will address itself to the pharmaceutical community at large; will support their interests, will strenuously—yet with propriety, direct its advocacy to the object of redressing their wrongs.

Strenuously, yet with propriety—we emphasize the words; for let our readers well understand, we are no less averse to the mawkish timidity which would varnish over abuses, and conceal the names of their perpetrators—than we are to sturdy, rough-hewn personality, of whatever kind.

Our readers will not take it ill that we remind them how doubly important it is that no inelegant asperity of attack should appear in print. Much licence is ever given to the spoken expressions of an individual when angry or excited, but no allowance is ever made for the same in print, even although the expressions be demonstrated to have arisen from the promptings of the better feelings of the heart.

We are not addressing ourselves to generalities; at this time our remarks are prompted by the impossibility we feel to publish certain letters which have been forwarded to us, all of them relating to the late illiberal attempt of Dr. Pereira and his coadjutors.

Although the subject matter of these letters is true, and their tenour excellent, we have not felt ourselves justified in publishing them, because of the rough and sturdy personalities which they convey. Had the letters in question been antagonistic of the principles we advocate, our sense of justice would probably have overridden every other consideration, and they would have appeared; but, as they are confirmatory of our own views, and, without exception, are the media of

expressions very flattering to our journal—the suppression of these letters is to us a personal deprivation, which we willingly incur, in the belief that it will conduce to uphold that tone of gentlemanly and delicate feeling which should ever characterise votaries of the liberal sciences.

SPECIFICATIONS OF CHEMICAL PATENTS.

Thomas Greaves Barlow, of Bucklersbury, in the city of London, civil and consulting gas engineer, and Samuel Gore, of Park-road, Old Kent-road, engineer, for improvements in the treatment of certain substances used in the production of gas for giving light and heat, and of some of the products of the said substances; as also in the apparatus employed in the manufacture of such gas, and in discharging and giving motion to such gas. Date of patent, April 16, 1851. Date of enrolment, October 16, 1851.

Of the voluminous specification annexed to this long title we shall give but a mere extract, chiefly confining our notice to the process therein contained for the manufacture of alum from the residue of the distillation of certain substances used in the production of gas. For this purpose we must first give a description of the method adopted by the patentees in the manufacture of a mixture of hydrogen and carbonic oxide gases in separate retorts, as furnishing one of the residuary products employed in the manufacture of alum, afterwards described. In this case the steam is first passed through a retort or retorts, charged with coke or other solid residuum of the distillation of coal, cannel coal, bituminous shale, schists, asphaltic lignites, or resinous earths, or other solid carbonaceous matter, from which the gas has been expelled, either in the natural state or supplied with a solution of carbonate of soda or carbonate of potash, and the resulting mixture of gases and steam is then passed through a condensing apparatus, with the view to remove the excess of steam; the gas is then deprived of its carbonic acid, by passing it through another retort or retorts, containing coke or other suitable residuum. When gas is required for heating purposes only, the process may be stopped at this point, but, when required for illuminating purposes, the mixture of hydrogen and carbonic oxide thus obtained is then conveyed into another retort or retorts, in which fresh charges of coal, cannel coal, bituminous shale, schist, asphaltic lignite, resinous earth, or other similar substances or mixtures of the same, are undergoing distillation, or in which tar, melted resin, resin oil, oils, liquid fats, or other liquid or fusible hydrocarbons are undergoing decomposition. The quantity of the mixture of hydrogen and carbonic oxide employed must depend upon the richness of the coal or other carbonaceous material undergoing decomposition, and the illuminating power of the gas required.

Instead of passing the mixture of hydrogen, carbonic oxide, and carbonic acid gases, after the condensation of the steam, through a second retort, the carbonic acid gas may be separated before the introduction of the gases into the carbonising retort, by passing it through lime or solution of carbonate of soda, or protoborate of soda.

The carbonic acid taken up by the lime may be expelled by heating it, and the lime thus rendered fit for renewed use; and the carbonic acid may be driven off from the solutions above mentioned after use, and thus become fitted for new operations. It is essential that, whichever process be adopted, the mixture of the gases must be passed through a condenser, so as to condense the excess of steam held by it.

Certain of the solid matters above mentioned, especially Boghead cannel coal, after being distilled and heated with steam, are found to contain alumina in a state capable of being dissolved out by acid, and of being manufactured into sulphate of alumina and alum. For this purpose, the residuary ash is placed in a suitable pan or boiler, with a sufficient quantity of dilute sulphuric acid, and, heat being applied, the acid dissolves the alumina, and thus sulphate of alumina is formed. This solution may be either evaporated to the requisite degree, or, a due proportion of either sulphate

of potash or sulphate of ammonia having been added, it may be evaporated and crystallised to form common alum. The kind of boiler recommended by the patentees for this purpose is one which is composed of two compartments, separated by a vertical partition perforated with holes; the ash of the Boghead cannel coal is placed in one of these compartments, and heat is applied underneath the other; by this means, the acid is made to circulate through the ash, extracting the alumina, the undissolved silica contained in the ash remaining in the compartment not exposed to the action of the fire; by this means all danger of burning the bottom of the boiler is avoided.

Instead of employing the ashy residuum, resulting from the treatment by steam of the residue of the distillation in retorts of the Boghead cannel coal, this residue may be employed in the manufacture of alum, by using it like coke as fuel for heating the pans or boilers, instead of submitting it to the action of steam, and, when reduced in this way to the state of ash, it may be submitted to the action of dilute sulphuric acid in the way above described. By treating the ash in the manner above mentioned, the residuum of silica obtained will serve for the manufacture of earthenware, glass, &c., and is so fine, that the patentees state it may be used as a *dentifrice*, and also as a *polishing powder*. The residuum of the distillation in retorts of Boghead cannel coal, and other substances of a similar character containing alumina, may be submitted to the action of dilute sulphuric acid, without the carbonaceous matters being previously removed by undergoing the process of combustion as fuel, or by treatment with steam; in which case the residuum, after the alumina has been extracted, will form a porous carbonaceous substance, capable of being employed to advantage as a decolorising agent, in place of animal charcoal.

Another improvement consists in the production of gas, for heating and illuminating purposes, from tar, melted resin, resin oil, oils, liquid fats, or other hydrocarbons, by subjecting them to destructive distillation in a hot retort filled with coke or other solid residuum of the distillation of coals, cannel coal, bituminous shales, schists, asphaltic lignites, or resinous earths, or other similar substances or mixtures of the same, upon, through, or over, is passed a jet of superheated steam; the steam and tarry or oily substances being introduced at one end of the retort, and the gas produced therefrom allowed to pass off at the other end. The temperature of the superheated steam may be about 600° Fahr.

Under this head of their invention the patentees claim the methods of treating Boghead cannel coal, and similar substances used in the production of gas for giving light and heat, by distillation in retorts, through which is passed a current of the gases resulting from the decomposition of water by carbonaceous matter, and the subsequent operations before mentioned, so as to produce sulphate of alumina, alum, silica, or a decolorising substance, as above mentioned.

[The following letters were sent to us by our reporter too late for insertion last week.]

17, Bloomsbury-square, Oct. 16, 1851.

Sir,—By direction of the council of the Pharmaceutical Society of Great Britain, I transmit you a copy of the resolution passed by them in reply to your application "to attend, report, and publish Dr. Pereira's lectures on *Materia Medica*."—I remain, Sir, your obedient servant,

Mr. J. C. Reed.

Geo. W. SMITH, Secretary.

At a special meeting of the council of the Pharmaceutical Society of Great Britain, held on the 16th of October, 1851, "to receive and decide upon an application made by Mr. J. C. Reed, to attend, report, and publish the lectures of Dr. Pereira," it was resolved, "That, as Dr. Pereira objects to the publication of his lectures delivered at this institution, this council conceives that it has not the power to grant permission to any individual to take notes with a view to their publication."

(True copy.)

Geo. W. SMITH, Secretary.

TO THE EDITOR OF THE CHEMICAL RECORD.

Sir,—Thank God, we have at last got a journal that look to our interests, and prevents the unblushing plunder so long carried on at our expense. The chemists and druggists are deeply indebted to you for the manly and independent stand you are making against the abuses in Bloomsbury-square. Why should not I, sir, see Dr. Pereira's lectures? I cannot hear them, not being able to leave where I am; but I have paid my money, and all I get in return is a copy of Mr. Bell's journal, which, whether we like it or not, is crammed down our throats. I will tell you of another abuse, sir, that is now brewing. The Pharmaceutical Society not being longer able to maintain the double position of educational and examining body, and Mr. Redwood being obliged to turn out from his present comfortable berth, he is preparing to have a school of pharmacy and chemistry of his own. Now, without saying he is unfit for a teacher, I will say that there are scores in London more fit than he; and that, with the University College and College of Chemistry so near, where chemical and pharmaceutical knowledge may be acquired, Professor Redwood's school of chemistry and pharmacy is something worse than a mockery. Lend us the aid of your powerful pen, and all will be well.

AN ASSISTANT.

TO THE EDITOR OF THE CHEMICAL RECORD.

Sir,—Far be it from my intention to utter one word disrespectfully of Mr. Jacob Bell, or any other gentleman connected with the Pharmaceutical Society; but I cannot help thinking that many of the measures of those who have taken upon themselves the responsible duty of managing the affairs of that society have had a strong tendency to alienate from it the affections of the members.

Much as I am dissatisfied with this unhealthy condition of the society, I yield to no one in a desire to see it prosper and to extend its usefulness; for I believe, without some such organisation, the pharmacists of this country will never acquire that status which they are justly entitled to.

It becomes, therefore, every well wisher of the Pharmaceutical Society, to inquire into the causes that are yearly inducing such defections from its ranks as to make every one tremble from the fear of its speedy extinction.

One fact is conclusive regarding the society—that, from whatever reason, those who were mainly instrumental in establishing it, and have since been the principal administrators of its affairs, have lost to the society the zealous support and interest which the pharmacists at large once evinced for it.

Without indulging in any personal imputations on Mr. Bell's capabilities and intentions, his journal presents this strange anomaly—it was brought into existence and supported by the society for the avowed purpose of forming a bond of union and an organ of communication amongst the druggists; it is still maintained in the same position, for the same pretext; whilst there is nothing but bickering in the society, and a secession of upwards of 2000 of its former supporters.

When the society was first established, loud and long were the promises conveyed through the mouthpiece of the society—the journal—of the eminent benefits that were to accrue to those who had, or would, join the society. Which of these promises have been realised? Echo answers—Which! The members still receive the journal in return for their subscriptions, it is true; but many evince their skill in finance by, instead of paying a guinea and a half to the society annually for the journal, withdrawing their subscriptions, and investing twelve shillings yearly in their bookseller's hands, with the same results.

Without desiring to impugn Mr. Bell's thrice-told tale of disinterestedness in conducting his journal, one result is self-evident in reference to the above statement, namely, that every member who secedes from the society, and continues taking in the journal through the medium of the booksellers, pays Mr. Bell double the price for the journal in proportion to the sum that the society pays him. From the circumstance of his journal being the recognised organ of the so-

ciety, whatever may be its merits or demerits in other respects, it is almost universally sought after by the druggists, hence Mr. Bell has a direct interest, and that a pecuniary one, in every secession that takes place.

Now, sir, as I am not one of those demagogues or disappointed men, whose only object is destruction, as Mr. Bell would stigmatise me for calling in question his policy, I will indicate the remedy for these evils.

Let the society take the journal into its own hands, and distribute it only to its members and associates, or reduce the annual subscription to 12s., the price of the journal.

Yours, &c.

H. P.

TO THE EDITOR OF THE CHEMICAL RECORD.

Sir,—The publication in your columns of the lectures on *materia medica*, delivered by Dr. Pereira at the Pharmaceutical Society, seems to have caused some little commotion in the ranks of the council, evidently desirous of upholding the close borough system. I cannot conceive what can be the motive of this exclusiveness, more especially when we are led to believe that the members of the society generally would deem the publication of them a great boon, and a desideratum long wished for. Can it be that the members of the council are mere puppets, who answer, but too well for the well-being of the society, the hidden power that pulls the strings, or is it a determination on their part to keep all the good things to themselves?

How stands the case? For the edification of the members I will state it; Dr. Pereira has delivered this course of lectures seven years (this is the eighth session) at the rooms of the society. What he was paid for doing so during the first portion of the time I am unable to say, but believe that it was considerably more than he receives now; he at present is paid £210 for the course of fifty lectures. Last session he had nine pupils, which produced to the funds of the society £17. 6s. 6d. I name this thus minutely to illustrate in some degree the amount of benefit his lectures may be assumed to have conferred upon the members and associates, and also at what cost or rather loss to the society. Taking the eight years at £210 each, gives a sum of £1680, which sum at least will have been paid for getting up this identical course, for I can see no difference between them, having occasionally attended during other sessions. Now I would ask, as a poor member of the Pharmaceutical Society, and with all due respect for the lecturer, if a sufficient sum has not been paid out of our pockets to warrant us in asking the privilege of having them published, at least for one, if not every session; it being well known that it is practically impossible for chemists and druggists, from distance, the nature of their calling, and other causes, to attend them personally? If we are not to have them published, why is this ruinous expense persisted in? Is it for the benefit of the lecturer or the members? The council can and must explain this. I shall also be glad to know from some authentic source if they are delivered this year with the entire approbation of the whole council. I am aware that they are now free to members and associates of the society; but is it to the council we are indebted, or to some external influence, for this act of liberality?

In conclusion, I will just give one more fact relative to the lectures; up to the conclusion of the last session the society was out of pocket the modest sum of £4286. 18s. 9d. on account of the lectures delivered by the different professors since their establishment; this requires no comment. With a fervent hope that the time is not far distant when members will be induced to look a little more after the doings of their society, I beg to subscribe myself, once a student, but now a

M. P. S.

IMPORTS OF DRUGS, &c., INTO LONDON DURING THE WEEK ENDING TUESDAY, OCT. 21.

FRIDAY, Oct. 10.—In the Trident, from Havannah. 11 tons fustic.

In the Zillah, from Cronstadt. 500 cks. tallow.

In the Ascendant, from Calcutta.
 81 ch. lac dye, 1500 pkts. turmeric, 9 bls. safflower, 99 ch. indigo, 7 cs. cassia, 2706 bgs. linseed, 148 bgs. shellac, 10,800 pcs. japan wood.
 In the Diana, from Amsterdam.
 1346 slabs tin, 60 bgs. caraway seed.
 In the Elizabeth, from Cronstadt.
 3186 bars iron.
 In the Themis, from Cronstadt.
 640 cks. tallow, 161 bars iron.
 In the Hastings, from Calcutta.
 606 bags saltpetre, 4 ch. lac dye, 19 bls. safflower, 302 cs. castor oil, 70 ch. indigo, 572 bags horn shavings, 250 pkts. turmeric.
 In the Jabez, from Table Bay.
 15 bgs. argol, 10 cs. aloes.
 In the Shepherd, from Petersburg.
 1100 bars iron.
 In the Welcome, from Cronstadt.
 108 cks. tallow.
 In the Margaret West, from Batavia.
 105 bkts. gum elastic, 497 bottles Cajeputa oil, 25 ch. indigo, 563 bgs. pepper, 16 bxs. nutmegs, 1 bx. mace, 12 jars ginger.
 In the Trio, from Stettin.
 2227 plts. zinc.
 SATURDAY, Oct. 11.—In the Poitiers, from Madras.
 45 ch. indigo, 24 bgs. cardamoms.
 In the Charlotte, from Calcutta.
 47 bls. safflower.
 In the Countess of Zetland, from Cochin.
 1 cs. croton oil, 240 bdls. aloes fibre, 1 box beeswax, 342 bgs. pepper.
 In the Lucinda, from Calcutta.
 129 cs. castor oil, 84 bxs. shellac, 1539 pkts. rapeseed, 486 bgs. linseed.
 In the Egir, from Jamaica.
 10 tons fustic, 50 tons logwood.
 In the Cambridge, from Stettin.
 2114 plts. zinc.
 In the Leone, from Realigo.
 139 serons indigo.
 In the London, from Rio de la Hoche.
 64 tons dividivi.
 In the John Medley, from Stettin.
 9734 plts. spelter.
 In the Melons, from Petersburg.
 642 cks. tallow.
 In the Salome, from Leghorn.
 10 cks. boracic acid.
 MONDAY, Oct. 13.—In the James Alexander, from Calcutta.
 177 ch. indigo, 116 ch. lac dye, 23 ch. 74 bgs. shellac, 436 pkts. Judlac, 250 pkts. rape seed.
 In the Jaramore, from Calcutta.
 571 cs. castor oil, 171 pkts. myrabolanes.
 In the Jane Pirie, from Calcutta.
 350 bgs. saltpetre, 10 ch. indigo, 20 ch. castor oil, 95 bls. safflower.
 In the Duke of Cornwall, from Madras.
 29 ch. indigo, 1 cs. sarsaparilla.
 In the Heart of Oak, from Calcutta.
 190 cs. gum benjamin, 645 bags saltpetre, 84 bgs. gum babool.
 In the Brutus, from Stettin.
 1505 pcs. spelter.
 In the Euphrates, from Colombo.
 2 cs. citronelle oil, 37 bxs. gum kino, 580 brls. plum-bago, 72 bls. cinnamon, 92 bxs. ginger, 10 cs. beeswax.
 TUESDAY, Oct. 14.—In the Grange, from Penang.
 76 cs. nutmegs, 85 cs. mace, 98 cs. cloves, 26 cs. pepper, 780 slabs tin.
 In the City of London, from Cochin and Beypoor.

2 cs. castor oil, 3 bgs. croton oil, 70 cs. gum kino, 882 cs. ginger.
 WEDNESDAY, Oct. 15.—In the Marlborough, from Jamaica.
 39 tons logwood, 4 tons fustic, 14 cases succades.
 In the Langor, from Sodichowen.
 4027 bars iron, 7 brls. tar.
 In the Cesario, from Hamburg.
 2206 plts. spelter, 60 cks. black lead.
 In the Araby, from Cronstadt.
 535 cks. tallow.
 THURSDAY, Oct. 16. In the Ocean, from Rotterdam.
 20 cks. barytes.
 FRIDAY, October 17. In the Diana, from Amsterdam.
 11 bls. camomile flowers.
 SATURDAY, October 18. In the Bentinck, from Whampoa.
 30 bxs. vermillion.
 MONDAY, October 20. In the Cheruaker, from Calcutta.
 299 cs. castor oil.
 In the Meghea, from Algoa Bay.
 32 cs. aloes.
 In the China, from Calcutta.
 290 cs. castor oil.
 TUESDAY, October 21. In the Canada, from Point de Galle and Colombo.
 4 cs. citronella oil.

TO CORRESPONDENTS.

* Gentlemen who send manuscript to the CHEMICAL RECORD under arrangement for payment are informed that original matter alone will be allowed to count; no abstracts, translations, or adaptations being receivable under the terms proposed. The propriety of this will be obvious.

"Sir,—Would you oblige me by stating in your paper, CHEMICAL RECORD, of this week, if I am open to a penalty for working the daguerreotype process for profit. If so, from whom and how long before the patent, if such, expire? A CONSTANT SUBSCRIBER. Suffolk, Oct. 23, 1851."—Our correspondent may work daguerreotype processes for profit with complete safety.

Mr. Griffin is sincerely thanked for his communication. Mr. Jamlyn is informed that the authorities of the Museum of Economic Geology, with a liberality which does them great credit, are about commencing a series of lectures for working men, the entrance to which will be gratuitous. We should advise his attending this course.

A correspondent sends us the following information relative to gold in Van Diemen's Land:—A gentleman in Liverpool (who formerly held an engineering appointment under Government) writes as follows:—"I think gold will some day be found in Van Diemen's Land. The chain of mountains, commencing at South Cape, running north across the island, and joining the Australian chain at Wilson's Promontory, is exactly in the same parallel of longitude as the chain itself. Another remarkable thing is, the geological formation of the entire chain of mountains, both in Van Diemen's Land and Australia. They form a barrier to a first epoch, which lies on the western side of the chain; the second and a small portion of the third epochs on the eastern side forming the sea coast."

"A Young Chemical Inquirer" cannot do better than purchase the treatise on Chemistry by Professor Brande, which probably for general purposes is the best treatise on chemistry we have. If our correspondent intends devoting himself to the occupation of chemical analysis, he should obtain the treatise of Rose, translated by Dr. Normandy, and also the treatise of Fresenius, translated by Mr. Bullock.

It is a vulgar error that the common English snake is poisonous. The animal is perfectly harmless, and therefore may be handled with the most perfect impunity; in fact, it is completely defenceless, its teeth being much too small for that purpose, and only adapted to retain its prey, for the most part frogs, though birds and mice are not refused.

"Eulanensis" should apply to the secretary of the society, who will afford him every information.

"Mr. Matthews" is informed that the chemical information which he seeks will be best supplied by the lectures and laboratory practice of the Museum of Economic Geology in Jermyn-street. By addressing a letter to the secretary of that institution, he will be furnished with all particulars.

"Mr. McCulloch" is not correct in his assumption. The statement certainly was made in chemical circles, that Dr. Hoffman would speedily relinquish his duties in the College of Chemistry, on account of another appointment which he had accepted. The statement, however, we learn, was incorrect. Dr. Hoffman will still remain.

The CHEMICAL RECORD AND DRUG PRICE CURRENT, conjointly managed by a CHEMIST, a PATENT SOLICITOR, and a LONDON BROKER, is published weekly, at its office, 17, Upper Wellington-street, Strand. It may be had through any bookseller or newsman, and will be regularly furnished from the office to quarterly, half-yearly, and yearly subscribers. Price 6d., stamped 6d.; quarterly, 6s. 6d.; half-yearly, 12s.; yearly, 23s. Payment in advance.

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Prepared only by GEORGE FRANKS, Surgeon, at his Laboratory, 90, Blackfriars-road, London, where they may be had in Boxes at 2s. 9d. and 4s. 6d. each, or sent free by post at 3s. and 5s. each.

*CAUTION.—To prevent imposition the Commissioners of Stamps have printed the name and address, "George Franks, Blackfriars-road," on the Stamp which is attached to each box of the genuine.

Where also may be had in Bottles at 3s. 9d., 4s. 6d., and 11s. each,

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TESTIMONIALS.

From JOSEPH HENRY GREEN, F.R.S., President of the Royal College of Surgeons, London; Senior Surgeon to St. Thomas's Hospital; and Professor of Surgery in King's College, London.

I have made trial of Mr. Franks's Solution of Copaiba, at St. Thomas's Hospital, in a variety of cases of discharges in the male and female, and the results warrant my stating, that it is an efficacious remedy, and one which does not produce the usual unpleasant effects of Copaiba.

(Signed) JOSEPH HENRY GREEN.

Lincoln's-inn-fields, 15th April, 1835.

From BRANSBY COOPER, Esq., F.R.S., one of the Council of the Royal College of Surgeons, London; Surgeon to Guy's Hospital, and Lecturer on Anatomy, &c.

Mr. Bransby Cooper presents his compliments to Mr. George Franks, and has great pleasure in bearing testimony to the efficacy of his Solution of Copaiba in Gonorrhoea, for which disease Mr. Cooper has prescribed the solution in ten or twelve cases with perfect success.

New-street, April 13th, 1835.

From H. A. CÆSAR, M.D., Surgeon, Professor of Anatomy in the Cork School of Medicine and Surgery; late President of the Hunterian Society of Edinburgh, &c. &c.

I have frequently prescribed Franks's Specific Solution, and deem it a valuable remedy in cases where Balsam of Copaiba may be prescribed with propriety, and have no hesitation in stating it is superior to any other preparation of the Balsam. (Signed) H. A. CÆSAR, M.D.

South Mall, Cork, Nov. 9th, 1841.

The above may be had of all Wholesale and of most respectable Retail Dealers in Medicine.

Mr. FRANKS may be consulted daily until two o'clock.

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The following letters afford evidence of the value of GUTTA PERCHA for Acid Vessels:—

From Messrs. BROWNE and WINGROVE,

GOLD-REFINERS, LONDON,

30, Wood-street, Cheapside, London,
24th January, 1850.

(Copy.)

SIR,

Having had in use for the last three months vessels lined with Gutta Percha for the reception of dilute Nitric Acid, we beg to state that in every respect the Gutta Percha is as good and as firm even as the first day it was used, and so highly satisfied are we of its valuable properties in resisting the action of this description of acid, that it is our intention to adopt it generally for every description of article or vessel to which we can apply it in our process of refining. Before we had fully made up our minds for introducing Gutta Percha into our Works, we submitted it to the severe test of a twelvemonth's trial in strong nitric acid, when the surface of the Gutta Percha was injured, while the interior was sound.

We have not the least doubt of its powers in resisting the action of dilute nitric acid such as we use, and that it can be extensively and profitably employed by us for this purpose.

We remain, Sir,

Yours obediently,

To Mr. Statham,
Gutta Percha Company.

BROWNE AND WINGROVE.

Anxious to ascertain the DURABILITY of Gutta Percha as a lining for Acid Tanks, a second application was made to Messrs. Browne and Wingrove (after the Tanks had been in use about fifteen months), and the following reply was received:—

(Copy.)

GENTLEMEN,

30, Wood-street, Cheapside,
27th November, 1850.

In answer to your inquiry with regard to our experience in the use of Gutta Percha, and whether it meets with our expectations, we have to return our most unqualified approval, both as to its capabilities and adaptation to our uses. We are highly satisfied with the article, and find it much the cheapest and safest we have hitherto employed. With regard to the specific gravity of the Acid to which the Gutta Percha is exposed we have never tried it, but the liquid contains near upon one-fifth of Acid at a temperature of 90 or 100 degrees.

We remain, Gentlemen,

Yours obediently,

BROWNE AND WINGROVE.

From Messrs. E. and J. STURGE,

CHEMICAL WORKS, BIRMINGHAM.

Birmingham, November 25th, 1850.

(Copy.)

In reply to your inquiry we are glad to record our continued satisfaction in the use of Gutta Percha for Tubing, Carboys, and other vessels; after more than twelve months' constant use, we are unable to trace the slightest action of Muriatic Acid upon them.

As far as our experience has yet gone, the material is equally proof against the corrosion of strong Alkalies, and also Sulphuric Acid, except at a high density.

THE NEW CORRUGATED FUNNELS ARE PARTICULARLY RECOMMENDED.

EVERY VARIETY OF VESSEL MADE TO PATTERN.

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THE PHARMACOPŒIAS IN ENGLISH.

Just published in One Thick Volume, post 8vo., with numerous Woodcuts and Diagrams, price 18s. cloth,

A Translation of the New London Pharmacopœia. Including also the NEW DUBLIN and EDINBURGH PHARMACOPŒIAS; with a full Account of the Chemical and Medicinal Properties of their Contents: forming a complete Materia Medica. By J. SIBBROCK NEVINS, M.D., Lond., M.R.C.S., and L.A.C.

"Dr. Nevins has not only undertaken a useful task, but he has ably executed it.... There is no other book at all to be compared with it either in extent or completeness.—Medical Gazette."

"The translation is correct and elegant, and nothing more could have been desired in this respect.... We can conscientiously recommend it as a book which cannot fail to be found very useful both to the student and practitioner of medicine, and which is well worthy a place in every medical library."—Medico-Chirurgical Review.

"Of the works that have been published since the appearance of the Pharmacopœia in February, 1861, that of Dr. Nevins.... is the most ample, the most complete, and we should think, upon the whole, the most serviceable. It is a book for the table of the consulting-room, the surgery, and laboratory; and shops cannot do without it."—Edinburgh Medical Journal.

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Chemists, 299, Strand, invite the attention of Students of Chemistry and Pharmacy to their stock of Apparatus and pure Re-agents.

Chemical Cabinets, Tests, and Experimental Chests, from 5s. 6d. to £20 and upwards.

Blow-pipe Apparatus.

Hydrometers, Urimometers, and Saccharometers.

Daguerreotypes and Photographers supplied with all the pure chemicals used in these arts.

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Very superior Single Cell Apparatus, in Wedgwood ware, 7 inches by 7, by 8 inches deep, 12s.; ditto, 5 inches by 5, by 5 inches deep, 8s. 6d.

Proprietors of the original Chemical Garden Ink, for writing on zinc.

TO GENTLEMEN WITH TENDER FEET.

J. Chappell, 388, Strand, corner of Southampton-street, BOOTMAKER and PROFESSOR OF FITTING, invites the attention of such to his METHOD OF MEASURING, by which he guarantees to produce a Fit unprecedented for comfort, and combined with the most fashionable shape. Those Gentlemen upon whom Boot-makers have practised unsuccessfully are particularly solicited by J. C., who will undertake to fit them at once, however difficult. Established 1835.

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EVERY ARTICLE WILL BE OF THE BEST QUALITY, AT THE LOWEST PRICE.

A supply of French Boots and Shoes will be received every month from one of the first houses in Paris. This department is carried on under the superintendence of Mrs. CHAPPELL.

Noirain's Ventilating Grates and Stoves.—A long sought-for desideratum at last obtained. Great Economy in Fuel,—entire Prevention of Smoking in Chimneys—and Perfect Regulation of the Temperature of Rooms, effected by the new Ventilating Grates, which may be applied to any fire-place.

M. NOIRAIN solicits the attention of the public and scientific men to his patent apparatus,—the utility and superior advantages of which will be satisfactorily demonstrated at his Depot, 131, Regent-street, to any visitor. The highest testimonials given. Prices, from two guineas upwards.

VOL. I.

Gutta Percha Carboys. The Gutta Percha Company

have been favoured with the following letter from

MESSERS. JAMES MUSPRATT AND SONS, OF LIVERPOOL.

(Copy.)

Liverpool, 8th September, 1880.

Gentlemen,—In reply to your favour of yesterday, we give it as our opinion that cool Muriatic Acid has no effect on the Gutta Percha. We have now had it in use for nearly a year, and we have no doubt, that in a short time, nothing but Gutta Percha will be used for conveying Muriatic Acid. For, although rather expensive at first, it soon pays for breakage and baskets of glass carboys.—Yours truly,

JAMES MUSPRATT AND SONS.

Every information may be had from the GUTTA PERCHA COMPANY, Patentees, 18, WHARF ROAD, CITY ROAD, LONDON.

National Provincial Life Assurance Society, 34

Moorgate-street, Bank, London.

Policies will not be void by an assurer being unable to pay the amount of his premium, as he will be allowed to charge the amount thereof on his Policy, which prevents a valuable policy being forfeited.

Should an Assurer be unable to continue the payment of his Premiums an arrangement may be made to secure a Policy free from any future payments.

Policy holders to the extent of £300 and upwards, on the Participating Scale, will have the privilege of nominating Scholars to the Endowed Schools of the Society.

The Assured are protected by a Guarantee Fund of £50,000, in addition to the Annual Income and Reserved Fund.

The payment of Premiums is arranged to suit the convenience of all classes of Assurers, viz., yearly, half-yearly, quarterly, or monthly. Periodical small payments develop the plan of this Society, which is to accommodate itself to the wants of the many.

No personal liability attached to the Members.

Annual division of Profits after the first Five Years.

Three-fourths, or Seventy-five per Cent., of the Profits divided among the Policy Holders, until the temporary Capital is paid off; when the whole of the Profits will be divided among them.

No Charge made for the transfer or assignments of Policies.

Separate Tables framed for those who do not desire to participate in the Profits of the Society at a lower Scale of Premium than that charged by a large proportion of Offices.

The Assured may reside in any part of the World, distant more than Thirty-five degrees from the Equator.

One-half of the Premiums may remain unpaid for the first five years.

Policies purchased on liberal and advantageous terms, or advances made on Deposit of Policies effected with this Society.

Mutual Assurance by Indisputable Policies.

No Entrance Fees.

Medical Practitioners paid by the Office for every Case referred to them for their Professional opinions.

Rates of Premiums calculated from the Carlisle Tables express' for this Office, and affording particular advantages to Young Lives Loans granted to Members upon approved personal security.

One description of Assurance may be changed for another. This provision will be of much general convenience; by means of it an ordinary assurance may be commuted for a reversionary annuity, or other equivalent risk, as circumstance may render desirable.

A system of Family Endowment and Annuities of a comprehensive character.

Policies issued from £10 to £5000.

Finally, it may be observed that the valuable privileges enjoyed by the Members of this Society can be obtained in no other. The Directors therefore confidently recommend it to all classes of the community, and respectfully invite intending Assurers to compare the many advantages offered by it with the principles and plans of others.

J. W. SPRAGUE, Manager.

ADVERTISEMENTS.

Weak Legs, Knees, and Ankles—Circumference of the Part for which the Bandage is required.



Prices are as follows:—Calf-piece, 10s. 6d. to 16s. 6d.; elastic silk stocking, 15s. to 21s.; knee-cap, 7s. 6d. to 12s. 6d.; sock 7s. 6d. to 12s. 6d. For carriage per post, 8d., if prepaid. Trusses, 7s. 6d. to 18s. each.

ELASTIC BANDAGE, 6d. to 8s. 7d. per yard.

ACCOUCHEMENT BELTS.

BAILEY'S BELTS are universally recommended by accoucheurs as giving great support to the Abdominal Muscles. No lady of weak or delicate frame should be without one. The prices are moderate, to suit the circumstances of all classes. Every kind of Elastic Bandage made for Weak Legs, Knees, and Ankles: Trusses, Hunting-Belts, and Suspensory Bandages. Copy the address.

Huntly Bailey, 418, Oxford-street, London. N.B. Female in attendance.

Joseph Loader, Upholsterer and Cabinetmaker,
23, PAVEMENT, FINSBURY, LONDON.—The extensive celebrity of JOSEPH LOADER'S Establishment for twenty-five years, for all articles appertaining to the Upholstering business, affords a certain guarantee to all purchasers from his stock that whatever they may select will be of the most approved fashion and best workmanship, moderately charged.

A tasteful assortment, suitable to the decoration of the Dining, Drawing-room, Library, and Boudoir, is uniformly kept, comprising Chairs, Tables, Pier and Chimney Glasses, Chiffoniers, Drawers, Wardrobes, Carpets, Mattresses, and Bedding, at regularly fixed prices, corresponding with the wants or elegances of household economy, offered on terms which none can successfully compete with.

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PATENT SELF-ACTING RECLINING CHAIRS,

that recline and elevate with the least possible trouble or difficulty to the occupier, the weight on the seat acting as a counterbalance to the back, by means of his Patent Self-adjusting Lever, requiring no rack, catch, or spring, to retain any required position.

J. L. also calls particular attention to his Patent Air-tight Bedsteads, carpeted and polished, at £1. 9s. and £1. 15s., equal to the most expensive Commodore, as well as the Patent Pedestal Washstands, marble top and fittings complete, particularly adapted for the office, surgery, or cabin.

PRESENT TARIFF.	£ s. d.	£ s. d.
Solid Rosewood Chairs, French polished ..	0 15 0	each to 1 2 0
Sets of Eight Mahogany ditto ..	4 4 0	— 4 10 0
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Invented by Mr. J. L. PULVERMACHEN, of Vienna, which may be said, without exaggeration, to open a new era in the history of galvanism, and its applications to medical and other purposes, and have met with the most universal approbation wherever they have been produced.

A Battery of sufficient intensity to communicate shocks through from eight to ten persons, perfectly to contract a limb without any sensation of pain, decomposing distilled water, and, in short, producing all the effects of a powerful voltaic pile of 150 combinations, occupies the space of only fifteen cubic inches, the ordinary size of a pocket-book!

They are besides permanently connected and arranged, so as to be at all moments ready for instantaneous use, wherever a cup of visceral can be procured. No cleansing previous to or after use required.

The new principle on which these powerful and portable Batteries are constructed has likewise been carried out in Weak Chain Batteries for personal use (weight about two ounces), which, when worn on the body, exercise a mild but continuous influence on the same, of a highly beneficial character in many chronic diseases. The effects of these small chains can be perceived the moment the chain is applied to the body; and they likewise decompose unacidulated water.

The apparatus may be freely tested, and a full description of this extraordinary invention may be had at the Depot, 103, Leadenhall-street, City; and 71, Quadrant, Regent-street.

C. MEINIG, Manager.

This invention has been illustrated, with success before the Royal College of Surgeons, the Pharmaceutical Society, and the Royal British Association in London; the Académie Nationale de Médecine at Paris, on the 1st of April, 1861, unanimously voted thanks to the inventor, for the communication of the same; and it is already in extensive use in the hospitals of London, Paris, and Vienna.

"I can hardly recommend Dr. Pulvermacher's ingenious invention too strongly to the use of my medical brethren."—Extract of Dr. Golding Bird's Letter, 29th of August, 1861. Published with his kind permission.

The General Wood-Cutting Company, Timber

Wharf, Sawing, Planing, and Moulding Mills, Belvedere-road, Lambeth, near Waterloo-bridge, are prepared to supply timber and deals, &c., cut and dressed, to any extent, at the current prices of the day. They keep a large stock of WELL-SEASONED FLOORING and MATCH BOARDS, which, being manufactured by themselves, they offer at the lowest remunerating profit. Their extensive saw-mill will be found convenient to the purchasers of their timber, as it can be immediately cut and prepared to suit any Purpose.

The Company beg leave to call the attention of the trade to their NEW MOULDING LIST, the largest ever published; and to state that, in addition to the numerous patterns therein delineated, their machinery enables them to execute every description of mouldings, from drawings, &c., with an accuracy and despatch which must ensure satisfaction.

The Company (without previous preparation) manufactured and delivered to the Great Exhibition fifty statute miles of such bars within ten days after receiving Messrs. Fox, Henderson, and Co.'s order, which these gentlemen have certified, and that the work was executed to their entire satisfaction.

The moulding list, containing nearly 300 diagrams, with prices attached, may be had at the Company's mills, or shall be forwarded on receipt of six postage stamps (the amount of the postage thereon).

Ford's Eureka Shirts and Ford's Eureka Shirts

Collars are not sold by any hosiery or drapers, and can therefore be obtained only at 185, STRAND. The Shirts are made in two qualities. The first is 40s. the half dozen, the second quality 30s. the half dozen.

Gentlemen who are desirous of procuring shirts in the very best manner in which they can be made are solicited to inspect these, the most unique and only perfect fitting shirts made.

Price Lists, containing directions for self-measurement and every particular, are forwarded post-free, and the pattern books to select from, of the new Registered Coloured Shirting, on receipt of six stamps.

The COLLARS possess an improved method of fastening, which entirely dispenses with the use of strings, loops, or elastic contrivances, adapted to any size, suitable for once or twice round wear, may be had in three different sizes, and either rounded or pointed. Price 11s. 6d. per dozen; two, as sample, sent post-free, on the receipt of 50 postage stamps.

RICHARD FORD, 185, STRAND, LONDON.

ADVERTISEMENTS.

Just Published (to be continued Monthly), in demy 8vo., price One Shilling, No. 1 of

THE

LIFE ASSURANCE CHRONICLE:

A MONTHLY RECORD OF, AND GUIDE TO, ASSURANCES, ANNUITIES, AND
GENERAL FINANCE.

Deeply impressed with the immense benefits derivable by society at large, and by our highly-civilized community in particular, from an organized extension of the great system of Life Assurance, and convinced that the beneficial effects alluded to can never be properly felt till a more extended knowledge of the great principles of Assurance is disseminated, and till an accurate, a faithful, and an impartial record of the progress made and daily making exists, the conductors of the *LIFE ASSURANCE CHRONICLE* have determined on establishing, under the above title, a Monthly Magazine devoted to the interests and to the advancement of Life Assurance.

Having gathered round them a staff of gentlemen long and intimately conversant with the subject, and many of whom are now actively connected therewith, the conductors have no fear of failing in the task they have proposed to themselves. Aided, moreover, by the possession of peculiar and rarely accessible sources of information, by elaborate statistical data prepared by skilful actuaries, and by a widely-extended correspondence, they feel confident in being able to place before the public a record of the present state, the past and future prospects, of Life Assurance detailed yet succinct, unbiassed and impartial in an eminent degree.

Full reports will be given monthly of such transactions of the established Assurance Corporations as are likely to excite public interest or to conduce to the public advantage. Every effort will moreover be made to place the public in possession of an accurate and minute summary of Life Assurance progress during the past month.

In addition to this, and in order to combine amusement with instruction, each number of the Magazine will contain two chapters of an entirely new and original Tale, by a popular Author, entitled "The Battle for Bread: a Tale of London in 1850."

No efforts will be spared to place the statistical department of the Magazine on the most accurate and clearest footing; and prompt attention will be paid to every passing topic bearing on Life Assurance, and to the inquiries of any correspondent, desirous of obtaining peculiar information.

Arrangements have been made with a gentlemen of extended experience and acknowledged abilities in matters of Assurance who will contribute a continuous series of papers on the subject of Life Assurance as a national system, on the general advantages derivable therefrom, on the peculiar benefits held out by particular companies to suit the views of those in the class of expectant assurers in particular states and professions in life. Great care will be taken, as regards the last named subject, to point out, clearly and distinctly, to persons desirous of effecting Assurances the best medium for the investment of their capital, and the Assurance Companies whose modes of granting policies are more specially adapted to their wants. Thus the clergyman, the merchant, the broker, the clerk, the soldier, the sailor, the freemason, the artist, or the man of letters, will all find in the *LIFE ASSURANCE CHRONICLE* a sure guide to their immediate requirements in Assurance. The members of each class will be clearly directed to modes of Assurance likely to suit their particular views; and much unnecessary confusion and misrepresentation—much deplorable disappointment and tribulation—will consequently be avoided.

While the main object and chief aim of this Journal will be the advancement of Life Assurance, considerable attention will be paid to other financial subjects, indirectly connected therewith, yet over which it exercises considerable influence. Annuities, Loans, and Mortgages, inasmuch as they affect or are affected by Life Assurance, will be treated of at length, and in a manner suited not only to the comprehension of the accomplished financier but to the comparative novice; to whom a clear and proper exposition of the best medium of financial investment is of so much and of such vital importance.

To give a pleasing variety to the *LIFE ASSURANCE CHRONICLE*, while, at the same time, it conveys important information, an interesting collection of papers, by a writer of literary eminence, will be given monthly, entitled "Materials for a History of the Investment of Capital in England." These will form an anecdotal and historical survey of finance and financiers from the time of the Crusades to the discovery of the gold placers of California downwards.

It will be, in conclusion, the end and aim of the conductors of the *LIFE ASSURANCE CHRONICLE* to act as unprejudiced and responsible guides both to the Assurers and the Assured—to bear, above all, in mind the interests of the public, and to endeavour (should necessity call for it) to warn them, and put them on their guard, against projects of Assurance as delusive and fallacious as they are dishonest—against speculators as ignorant as they are greedy, rapacious, and unprincipled. It will be their special task to expose those mercenary and mendacious speculators who hang on the skirts of every noble scheme, and who would seek by chicanery and dishonesty to injure a magnificent and philanthropic institution.

All Communications must be sent to the Office of the *LIFE ASSURANCE CHRONICLE*, 17, Upper Wellington-street, Strand, addressed to the Publisher,

MR. RICHARD RADCLIFFE POND.

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ADVERTISEMENTS.

ATHENÆUM LIFE ASSURANCE SOCIETY,

30, SACKVILLE STREET, LONDON.

Established for the Assurance of the Lives of Authors, Painters, Sculptors, Musicians, persons connected with every Art and Science, and the Public generally.
INCORPORATED BY ACT OF PARLIAMENT.

CAPITAL £100,000, IN SHARES OF £1 EACH, TO BE PAID UP IN FULL.
WITH POWER TO INCREASE TO A MILLION.

PROSPECTUS.

In ushering before the world for its consideration and patronage any addition to a subject previously well known, it is generally expected and required that there should be at least an appearance of novelty, although the subject itself is incapable of receiving any material improvement. The projectors of this Society, however, from experience and correct calculation, having discovered new principles and features in Life Assurance, so peculiarly adapted to the feelings, views, and wants of literary men, artists, musicians, and all persons connected with every branch of art and science, are convinced, when such advantages become known and appreciated, the ATHENÆUM must take the lead amongst those Societies which are ever on the watch to achieve new and beneficial results for all who have confidence in their exertions.

Men of letters and the liberal arts are too generally regarded with censure rather than with commiseration, on account of the unfortunate circumstances so often attending their worldly affairs, and which have unjustly given them a character for improvidence; yet few persons in the active pursuits of business can form a proper notion of the many causes which prevent the student, the scholar, and the secluded artist from being so fortunate as themselves; nor is it here considered fit to analyse such causes, or set right such notions. The object of this Society, therefore, is to allow the man of letters and the artist to indulge in that dreamy existence so peculiarly his nature, and so essential to the development of his talent, and give protection and provision where so much required. For while this urged improvidence is admitted to be no consequence of selfishness, it being well known that in no other class is disinterested nobleness of spirit so often and unequivocally exhibited,—yet no means have hitherto been devised to arrest this censured characteristic. This Society, therefore, wishes to open an independent course for the consideration of

men of letters, art, and science, especially as it is brought before them with associations of their own, and in no way assuming the offensive and humiliating position of charity.

Many a great work has been left unfinished, many a teeming brain has given way before those powerful foes to genius, anxiety and fear of the future! How often has the man of talent paused and trembled, while he has contemplated the destitution of his family, and all that is dear to him, if overtaken by death in the midst of his projects; and while Life Assurance is suggested to obviate such afflicting thoughts, then the apprehension that, should adverse circumstances prevent punctuality in his annual payments, the sacrifices already incurred will have been in vain. This Society cheerfully and with confidence points to the provision it has made for such cases, where help will be given, and every encouragement afforded to sustain the claims upon it unforfeited and uninjured.

To the young, the principles of this office will be peculiarly beneficial, the amount of premium being so trifling; while in the course of time the participation in the profits of this Society must return them such sums, that all they may have advanced in their early years will not only have passed again into their own possession, but a property established that will be of value during life, or a handsome bequest in case of death.

It is therefore hoped, by the establishment of this Society, to remove from men of letters and artists the reproach that in so many instances has attended them, to enforce a more ennobling appreciation of their worth, to prevent their becoming objects of charity, which humiliates as much as it relieves; and that, in the midst of their triumphs, and while in the possession of health, there shall not be seen in the dim perspective the almshouse or the prison.

NEW FEATURES OF THIS OFFICE, TO WHICH ATTENTION IS PARTICULARLY REQUESTED.

This office will introduce a system for obviating an acknowledged difficulty in the way of propagating the advantages of Life Assurance. In fact, the principal objection to adopt its blessings, even by many who thoroughly appreciate its value, is the possibility of forfeiting their policy by being unable to meet the payments when they become due; and, on the part of the offices, it has been an unwise, not to say an unjust, proceeding to compel a strict observance of this provision. It has been unwise, for the reason, that, by carrying out this measure to the letter, such enormous profits have arisen from it as to become unwieldy and useless; since the management of them engrosses such attention and trouble as to make the office careless of extending its business. It has also been unjust; for, instead of rewarding prudence and self-sacrifice by assisting, even for a while, such strenuous exertions for the accomplishment of a noble object, or by bestowing some equivalent for past privation, it passes by such virtue unrecognized and unrewarded, and thus perverts the very principle from which Life Assurance emanated. To remedy as far as possible this defect, there will be a fund instituted by the Athenæum, called the Provident Fund, to be raised by the mutual contributions of the members themselves, on the following original and beneficial plan:—

The first five hundred persons who desire to participate in this benefit will leave a tenth portion of their policies for the purposes of this fund, which will be thus applied:—

1st. To the keeping up the policies of such members who shall have previously paid five annual premiums. The aid afforded by this fund for that purpose will not be continued for a longer period than five consecutive years, and to be returned to the Society at the convenience of the assured, with interest at the rate of 5 per centum per annum, or the sum advanced may be deducted with such interest from the policy when it shall become a claim.

2nd. To grant small loans on the deposit of the policy to those members who may require temporary assistance.

3rd. To such qualified members who really need it, the Directors will have the discretionary power of granting such an amount as will purchase in the Society an Annuity, not exceeding £100, during the lives of themselves and widows; and

4th. To divide among the surviving members, at the end of twenty years from the date of the list being closed, the whole of the remaining and unapplied portion of the fund.

The rates of premium to secure these important advantages are lower than those in many first-class offices where no such privileges exist. For example, to assure £1,000 at the age of 30 in the Equitable would cost £246 14s. 2d. per annum; while a premium of £26 5s. in this office would assure, in addition to £1,000 the sum of £100 to the Provident Fund.

It is also determined to provide, as far as practicable, a similar fund for such of the original Shareholders as may become distressed, by applying a portion of the entire profits of the Society for such purpose.

One important feature of this society, and which has not yet been adopted by any other Assurance Company in this country, although generally in operation on the Continent, is the plan of granting policies made payable to the holder. The difficulty, expense, delay, and annoyance so frequently experienced in pecuniary transactions in the assignment of policies, have long been felt as a grievance; and the Directors of this Society, having given this subject much consideration, and acting under

the advice of competent legal authorities, are resolved to give the assured the option of receiving policies payable to the holder. The advantages of these policies must be obvious, as their simple construction will give greater facilities in their temporary or permanent transfer to a third party. This has been so fully appreciated on the Continent, that policies in any other form are absolutely refused by the great bulk of insurers. The publicity, so frequently annoying and detrimental, in the assignment and re-assignment of policies in pecuniary transactions, as well as the delay and expense consequent on the old system, have been so often complained of, that the Directors of this Society believe that the plan of making policies payable to the holders must eventually be generally adopted in this country.

A moment's reflection is sufficient to show that the great bulk of the middle and professional classes of this country stand as much in need of provision against the casualty of permanent sickness as against that of death; while statistical inquiries have proved that nearly 5 per cent. of the adult population of this kingdom are constantly incapacitated from following their occupations, and a great portion at advanced periods of life become permanently invalided. Therefore, to meet so important a desideratum, this Society will, on very moderate terms, grant Policies payable during the time of very long sickness, or when accident or any other casualty shall prevent the assured obtaining his livelihood.

To conclude, the Directors wish it emphatically to be understood, that there are no privileges or advantages in this Institution in which the public do not fully and equally participate, as the appeal is to them; and no benefit can accrue to any class, however worthy or respected, without the co-operation and support of all.

This is the only Society that issues Policies absolutely indisputable. Claims paid immediately on satisfactory proof of death, and the exhibition of such documents as are required by law.

Seventy per cent. of the profits divided among those assured on the participating scale, thus securing all the real advantages arising from a Mutual Association, without incurring any legal or pecuniary liability whatever.

The first division of profits will take place at the end of seven years, and thenceforward every five years, and may be applied as a bonus, to be added to the sum assured, in reduction of future premiums, or in cash.

Diseased lives assured on equitable terms, the extra premiums being discontinued on restoration of the assured to permanent health.

Members of consumptive families assured at equitable rates. Assurances may be effected from £50 to £10,000.

Endowment Assurances granted, payable to the Assured, should he live to a given age, or to his representatives should he die before.

Immediate and deferred annuities on very favourable terms. No entrance fee charged.

The extra premiums for residence in foreign climates are lower than in other offices, and are founded on data.

Assurances may be effected in one day, the medical officer being in attendance.

Interest at the rate of 5 per cent. allowed on the paid-up capital. Medical men remunerated in all cases by the Society.

A liberal commission allowed to all who introduce business.

HENRY SUTTON, Manager.

[* Dr. Pereira has discontinued lecturing at present. See page 304.]

THE NATIONAL IMPORTANCE OF STUDYING AND PROMOTING ABSTRACT SCIENCE AS A MEANS OF GIVING A HEALTHY PROGRESS TO INDUSTRY.

By LYON PLAYFAIR, C.B., F.R.S.

(Continued from page 292.)

The every-day progress of the arts abounds in new applications of objects the most familiar. Practical, like abstract science, has no limits. The Romans thought themselves at the culminating point of civilisation; and the Greeks, pluming themselves on their inventiveness, could not conceive that the world would ever take a higher flight. Even in our times like opinions are entertained, because ignorance cannot see over the heights raised by modern science for a wider view of creation. These conceited ideas of a nation or of an age have no foundation. In science there may be an horizon which bounds her view; but as she proceeds onward the horizon constantly recedes, and shows the limit to be altogether illusory. In one time and generation a nation may, like Newton, pick up a few pebbles on the sea shore, while the boundless ocean of science lies beyond, with all its vast and unexplored treasures. Empiricism has frequently been a substitute for science—a lame and sluggish substitute, it is true; but, nevertheless, one which, in the history of mind, has had much of influence. Gunpowder was known before the condensed air of which it consists was recognised or understood, and it succeeded in killing man, without knowing that man himself is little more than air similarly condensed. Man used and succeeded in producing condensed air, in the form of food, without having the slightest conception of the character of the air out of which this wondrous transformation was effected. Without a knowledge of atmospheric pressure, mills and pumps were formed; glass was produced from the ashes of the fern, and china from kaolin, without a knowledge of the principles involved in their production. The length of the year was known, and the duration of the seasons explained, without the law of gravitation being suspected. All this, it is true, arose without science, but required ages to grow into a stunted and feeble childhood; while, no sooner did science remove the trammels of ignorance, than a few short years produced a vigorous manhood. Ignorance may grope in darkness on the confines of an unexplored region; but, to proceed steadily and securely onwards, she must borrow the lamp of science to guide her. Newton, "that glory to his species," as Chalmers calls him, did, by the exposition of the law of gravitation, produce more real practical benefits to industry than all the ages of empiricism which preceded him. Navigation, and consequently commerce, sprang from his time into a state of development which before was impossible, and every nation and every human being enjoys from him, and to the end of time will enjoy, actual material benefits, which an eternity of empiricism could not have produced. The hard-won experience of two thousand years of the Chinese in regard to porcelain was given to the European by a few years' application of science. The improvements in postal communication, which allowed our kings to transmit a message to Edinburgh in five days, now enable us to send it in less time than their "post-haste messenger" could saddle his horse. But these and other triumphs of mind over mere empirical experience arose from a steady progress of abstract science, the practical applications of which appeared as offshoots. It is my chief object to show that it is the abstract science which is necessary to the development of practice, and that it is

above all things necessary that it should form the education of a man who is to devote his life to the progress of industry. There is no vein of science too abstract for future industrial application—none which is yet thoroughly mined out and exhausted. Volumes might be filled with illustrations of the practical benefits which have arisen from the application of discoveries apparently the most unpromising in their origin, but a few only can be selected in support of the text of my argument. The most "practical" man, a title used by our English to envelope their ignorance, could not have objected to the marvellous development of truth arising from the study of light, that messenger from the sun, which had travelled to us at the rate of 180,000 miles in a second, to illumine our earth with the glory of its parent. It was wondrous to be told that the light of yonder far distant fixed star, travelling without cessation at the same incredible speed, and which has this night struck our wondering eyes, started in its long and weary course some billions of years since, and has now for the first time shed its pale light on such points in time and space as ourselves. The sublimity of these truths awes the utilitarian, and hushes his half-uttered question of *cui bono*? But show him a young officer of artillery, looking through a prism at the windows of the palace of the Luxembourg, and noticing that in a particular position the light of these windows disappeared from his view. Show him, further, the startled wonder with which the philosophers of Europe heard of this phenomenon, and the eagerness with which they threw themselves into the track of an observation apparently so insignificant, and your utilitarian sneers at science and its followers, and buries himself again in the darkness of his empiricism. The light which was reflected from the palace of the Luxembourg had suffered a change similar to that experienced by ordinary light in passing through closely-refracting Iceland spar. When a ray of this changed or polarised light is passed through plates of crystallised substances, brilliant colours and a peculiar structure were observed. These remarkable phenomena were indeed well worthy of the attention of scientific observers. Nothing, however, could appear more remote from practice than the study of an altered beam of light. It was most interesting that, as in the case of sound, where two sounds reaching the ear either exalt or destroy the effect, so in light, two rays interfering with each other may produce darkness. Much of the light from reflecting surfaces was found to possess this changed condition. The light coming from the surface of water, being thus altered, refuses to pass through a "Nicoll's prism" in a particular direction. If, therefore, you look at the shadow of a man on a smooth lake, on turning round the prism the shadow disappears, while the man seen by common light remains visible; the story of Peter Schlimmel is thus realised. But who from these curious observations would have dreamt that out of them would come useful applications? In a short time, however, this property of the polarising prism was applied to the important purpose of detecting rocks and shoals at sea. It had long been the practice of mariners, when they suspected the existence of shoals, to look out for them from the mast head, because the outlook from his vertical position shut out much of the light which dazzled and obstructed his view. But, as part of this dazzling reflected light is polarised, it is obvious that the polarising prism enables the observer to scan the depths of the ocean uninterrupted by its glare. Behold, then, the light which struck the student's eye, when gazing on the Luxembourg, used to preserve man from the hazards of the sea. It was easy to apply it in new directions, and the salmon-fisher speared fish at depths inaccessible to his unaided vision, while the engineer used its

searching powers to discover the laws of tension in beams. Mechanics and chemistry both pressed it to further their resources. Under the hands of a Biot, a ray of polarised light performed with magical quickness the most refined but tedious operations of the analytical chemist, and enabled him to tell the amount of sugar in the cane or beet juice. He thus followed the increasing richness of sugar in the juices of various plants at different stages of their growth, and was enabled to suggest a more economical adaptation of the labour applied to their cultivation. Thus, when beet is ready to be gathered, labour is in demand for the harvesting of other crops, and consequently is expensive. It would not then do to take another crop, such as parsnips, inferior in its amount of sugar, as the cost of production would outweigh the return. But when the horses and carts are disengaged, and labour is cheap, parsnips are richest in their amount of sugar, and the idle mills may be usefully employed in producing sugar from this plant. By the same ray of light the size of distant objects may be measured, and even time may record its passage. This latter application, made by Wheatstone, is especially remarkable, and gives a means more accurate and useful than the sun-dial of determining the apparent solar time by the diurnal changes of the plane of polarisation at the north pole of the sky. By availing himself of the fact that the planes of polarisation in the north pole of the sky change exactly as the position of the hour circle alters, he has adapted a simple and ingenious apparatus, by which the true time may be told within three minutes. All these are strange paths to practice, opened out by a ray accidentally caught in its passage from a window of the Luxembourg. Pass from its utilitarianism to its unfolding of nature's laws, and follow the same straggling ray, as it silently displays its gorgeous colours while passing through a transparent mineral substance, until it gives to man the knowledge as to whether the light of the sun proceeded from its solid mass or from its gaseous canopy, or whether comets enjoy light of their own, or borrow it by reflection from other bodies.

I now pass to light in its ordinary form, and ask you to examine the importance of studying its abstract phenomena. The world had long known that salts of silver were blackened by exposure to light, and the fact became familiar by their use as cauteries, or as indelible inks for linen. Wedgwood proposed to apply this means to fix the fleeting pictures of the camera obscura, but, the results of his experiments being imperfect, the suggestion itself was almost forgotten. In the meantime chemists pursued their abstract discoveries, and, without relation to this want, investigated the properties of gallic acid, and of the iodide of bromine, and found a class of salts termed the hyposulphites. Some of these bodies possess properties which accelerated the blackening of silver salts by light; the others prevent the further blackening when applied. Philosophers began now to revert to the old idea, for truth is never lost, though its reality may be incapable of proof at a given time, and thus various unconnected discoveries began to react one upon the other, until man was able to use the sun as the painter of the pictures which he exhibits and enlivens with his glory. So perfect became the art, by new adaptation of other discoveries, that the most fleeting objects can be depicted. The flash of lightning exhibits its fiery streak on these sun-painted pictures. The tossing out of lavas, the vomiting forth of smoke, and the bellowing of flame from craters in their wildest moods, are portrayed with unerring fidelity; the tumultuous dashing of the cataract, and the slight rippling of the stream, the changing forms of the cloud, the sparkling of the raindrop, and the ever-varying expression of the

human countenance, are all capable of being preserved in these paintings by nature. Nay, the truthfulness of the sun-painted landscape is so great, that from the very shadows on the picture the altitude of the sun may be determined; and, the time at which it was taken being known, the latitude of the locality may be elicited. Artists now use this application of light to acquire models for study; and the engineer employs it to obtain proofs of the exact state and progress of the works superintended by him. Doubtless, very soon, for it is now all but accomplished, the sun will be compelled to fix those transitory coloured glories which he now imparts to natural objects; but not till then should men cease to inquire as to the means of accomplishing this end. I need not say that this art is but disclosing its future applications. Already can we use the sun to record observations too delicate for man's perception. The constant and momentary excursions of the magnet, the ever-recurring variations of the thermometer and barometer, are now recorded by light with a fidelity and precision unattainable by the most conscientious and unremitting observers. These instances will suffice to show that the study of abstract laws, so far as regards light, produce as offshoots important practical applications. In each department of science like lessons may be taught. There never was an age so rich in practical applications as that in which we live, and it is interesting to see them drawn from truths which have long been familiar to man, or which seemed to be beyond the range of utilitarian application. When an Italian physician, having hung on an iron railing the legs of a frog fastened to copper hooks, observed that each gust of wind caused convulsions in the legs of the dead animal, who could have prophesied that this accidental observation would entirely alter the character of a future century? And yet it is but an application of this discovery, extended, it is true, by many intermediate researches, that annihilates space and time, that empowers our thought to travel with the speed and with the power of lightning to the most distant land, and enables mind to be reciprocated without being arrested by distance in space. Who could have dreamt that the same discovery of Galvani would in future join continents, in spite of intervening seas, and give more security to nations than cordons of soldiers or fleets at sea, by rendering sudden invasion all but impossible? At the late Exhibition you had a singular proof of this quick interchange of intelligence, for every morning you could buy at a trifling cost a map showing the state of the wind, of the barometer and thermometer, in all the principal towns in Great Britain during the previous day. You have already seen how useful may be made this discovery; for the transit of a star at Greenwich and at Paris may be instantaneously recorded, and the longitudes of these places be verified. As a means of communicating intelligence, its powers are not yet nearly developed, for in its mercantile communications it produces results no less individually important than in its general results, such as when it sends information to distant provinces of the approach of a tornado, time being thus given to provide against the fury of the storm. It is rare indeed that brilliant discoveries, such as the electric telegraph, flash matured across a human intellect, and in a generation produce such mighty results. It is true that some of the most wonderful discoveries have been shadowed forth by some sudden inspiration, but in few cases has that shadow appeared as a picture with all its lights and shades. Before steam had been subjugated to the service of man, in accelerating his transit on land or water, Darwin had said:

"Soon shall thine arm, unconquered steam, afar,
Drag the slow barge, or move the rapid car."

It was a similar inspiration that showed to Goethe that

plants were but a development of their leaves; and that made Oken, when stumbling over the bleached skull of a peasant, perceive that the odious system was constructed on the vertebral type. But it was only by patient and long-continued study that these thoughts became substantive realities. This is essentially the case in electricity, which is but now beginning to reward mankind at large for all the patient investigations of the philosopher. Already has the fierce and untamed lightning allowed itself to be dragged from its course, and be conducted tranquilly to places where its fury is dissipated without injury to man. Even in its fiery flashings in the wide expanse of the ocean it submits to the intellect of a Franklin, and leaves unscathed the ship rolling on the stormy waves. Providence, in its beneficence to man, has allowed him to find "a way for the lightning of thunder." Artificially formed, it allows itself to be conducted through land and sea, humbly serving the purposes of man, by blowing up mines, or enabling him to rescue treasures from sunken vessels. This immaterial power produces material results at places fixed on by the will of man, and London may now fire a friendly salute at the Invalides, while Paris returns the compliment with the guns of the Tower. Although as yet electricity is not used with economy as a motive power, the obstacle is only in the cost, and even this may be resolved as discoveries progress. Although her passage is so rapid that a journey to Paris could scarcely be expressed in time, yet she may be controlled and used to record Time's own progress, for nothing is more accurate than clocks worked by her power. It would not be difficult to have all the clocks in a town worked with perfect uniformity by the aid of electricity. Electricity now plates with gold and silver the baser metals; copies in metal, from more perishable materials, the most exquisite designs and forms; perpetuates the skill of the engraver by multiplying, at a trifling cost, his elaborately engraved plates; and separates and purifies the metals, which could only be obtained by tedious and complex chemical operations.

Electricity offers for your lighthouses light of a brilliancy the most intense, and asks you to substitute the light gas which streams through the streets by a still more ethereal existence, running along simple wires. Even in the smallest offices of good-will to man she refuses not her aid, and offers to tell the perfumer whether his essential oils are adulterated with cheaper fatty substances, as willingly as she lends aid to the chemist in the minute operations of his laboratory practice, or as she kindly ministers with the physician to allay human suffering, and restore wasted strength. Recollect that all these are but the beginning of her applications, and that we know not to what extent they may be carried out; and rejoice with me that philosophers studied her abstract laws, from the knowledge of which these applications have arisen.

I have no time to extract further examples from physics or meteorology, but I cannot refrain from directing a passing glance at the beautiful discoveries of Colonel Sir William Reid. Studying the phenomena of a hurricane at Barbadoes, he followed out his observations to all recorded hurricanes, and thus elicited the simple law, that hurricanes and many gales are progressive whirlwinds, revolving in the direction of the hands of a watch in the southern, and in the reverse direction in the northern hemisphere, but moving along in its mass at the same time. The variable winds in a hurricane now become intelligible, and a mariner caught by it may make every wind a favourable one to steer out of its course, and prevent himself being overwhelmed in its vortex. To be wrecked in a hurricane can now only result from a

lamentable ignorance of scientific laws, for knowledge has triumphed over the terrors of the storm.

Let us now turn to chemistry proper, and see how this supports the text of the argument. It is an old science; and from the time of Tubal-cain to that of Liebig has been progressing steadily onwards, though not always with similar aims and aspirations. The alchemists erred, as England now errs, by valuing and studying only practical applications, instead of following abstract laws. Health, wealth, and longevity comprised their aspirations, in the place of eternal truth. But these objects were sufficiently important to produce in the search a "zeal allied to madness," and facts became accumulated of infinite importance to the science when it attained self-consciousness, and learned to value itself for its nobler ends. No later than the time of Henry IV. a royal edict recommended that "the clergy should search for the philosopher's stone; for, since they can change bread and wine into the body and blood of Christ, they must also, by the help of God, succeed in transmuting the baser metals into gold." As soon as chemistry began to be studied for the mere sake of abstract truth, then she deigned to reward man for his unselfishness by numerous collateral results, having a direct material benefit. "The philosopher's stone," says Liebig, "for which the ancients sought with a dim and ill-defined impulse, was, in its perfection, nothing else than the science of chemistry. Is not that the philosopher's stone which promises to increase the fertility of our fields and to ensure the prosperity of additional millions of mankind? Does not chemistry promise that instead of seven grains we shall be able to raise eight or more on the same soil? Is that science not the philosopher's stone which changes the ingredients of the crust of the earth into useful products, to be further transformed by commerce into gold? Is that knowledge not the philosopher's stone which promises to disclose to us the laws of life, and which must finally yield to us the means of curing diseases and of prolonging life?" He that supposes that chemistry is the result of practical knowledge, derived in its contact with industry, knows little of the progress of the human mind, or is little grateful for the infinite development which it has given to human resources and human enjoyment. Let us select a few examples of abstract chemical truths bearing on practical appliances. When Dumas investigated the laws of substitution, and discovered a new body by distilling alcohol with bleaching powder—interesting, indeed, in its chemical formula, but capable of being sneered at by those who see science at a distance, by a wrong-end telescopic view of its commercial productiveness—who could have dreamt that this chloroform was destined to remove many of the woes which man is heir to, by mitigating pain, and preventing its occurrence even in the most severe surgical operations? In 1842, I had the pleasure of travelling with the Dean of Westminster and Liebig over different parts of England; among other places we visited a limestone in the neighbourhood of Clifton, where, in former times, Saurian reptiles had been the pirates of the sea. There, along with the relics of the fishes on which they had preyed, were their own animal remains. Coprolites existed in great abundance, and proved the extraordinary number of the reptiles which must have existed. The interesting question arose as to whether these excretions of extinct animals contained the mineral ingredients which give so much value to animal manure. The question was in fact not yet solved by the chemist, and we took specimens, in order to confirm by chemical analysis the views of the geologist. After Liebig had completed their analysis, he saw that they might be made applicable to practical purposes. "What a curious and interesting subject for contem-

plation! In the remains of an extinct animal world, England is to find the means of increasing her wealth in agricultural produce, as she has already found the great support of her manufacturing industry in fossil fuel, the preserved matter of primæval forests, the remains of a vegetable world. May this expectation be realised, and may her excellent population be thus redeemed from poverty and misery!" I well recollect the storm of ridicule raised by these expressions of the German philosopher. And yet truth has triumphed over scepticism, and thousands of tons of these, or similar animal remains, are now used in promoting the fertility of our fields. The geological observer, in his search after evidences of ancient life, aided by the chemist, excavated extinct remains, which produced new life to future generations. Two years before this, the same German philosopher, in his researches into the food of plants, had drawn attention to the importance of guano as a manure, and by his intellect wafted fleets to the Ichaboes and to the Incas. Mankind gets so accustomed to luxurious applications of science, that it often forgets the searcher of abstract truth, whose discoveries led to them. Nothing is more useful than has been the discovery of the lucifer-match. Some of us recollect the time when the tinder-box was the only artificial means of procuring light, and a lively remembrance of the often unsuccessful efforts, always tedious and lengthy, is required fully to appreciate the value of the lucifer match. What an improvement it was when a little bottle of oil of vitriol could be carried about, and, by dipping matches into this, light was obtained; and yet this elegant method is now considered clumsy, and is entirely superseded in less than ten years. The properties of chlorate of potash and of phosphorus became by study better understood, and their application to the production of artificial light was apparently perfected. But the lucifer match-maker is dangerous to society and a curse to himself. The transparent waxy phosphorus with which he works must always be kept under water, and even then is so hazardous that insurance offices decline to insure the premises in which it is contained. In working with it, the heat of the hand will cause it to inflame, and the worker, even avoiding this, becomes diseased and liable to ulcers. The practical man now comes helplessly, and lays his wants before the searcher of abstract truth.*

(To be continued.)

PROGRESS OF SCIENCE AT HOME AND ABROAD.—TRANSACTIONS OF SOCIETIES, COMMUNICATIONS, &c.

PARIS ACADEMY OF SCIENCES.

Sitting of November 17.

ON THE PRESENCE OF IODINE IN THE AIR OF THE ATMOSPHERE.

By M. CHATIN.

M. Chatin read an account of his further researches on the variations observable in the proportion of iodine in the air of different localities.

In proceeding to a distance from Paris, where the presence of iodine in the air is very abundant, and approaching the Alps by Burgundy and Lyons, M. Chatin has ascertained that, starting from this city, or rather the basin of the Rhone, the atmosphere contains a less proportion of iodine than the basins of the Seine, of the Thames, of the Somme, of the Oise, of the Yonne, &c.

The proportion appears to vary a little from Lyons to Rives, which separates an immense plain, diversified with

rising grounds, formed for the most part of the Alpine diluvium. The air of the valleys situated near the Italian side of the Alps does not contain more iodine of than those which look towards France.

When we descend from the Alps into the plains of Piedmont, we find almost on a line, starting from Ivree, and going to Genoa, in passing by Turin, Alba and Acqui, the same atmosphere as from Lyons to Grenoble. The general result, therefore, is, that in proportion as we approach the Alps the quantity of iodine in the air diminishes. The same result is also noticeable at different parts of the Alps themselves, especially at Maurienne, where the air does not contain a trace of iodine.

In his next communication M. Chatin will give the result of his researches on the iodine in the salt, and in the elementary products of the Alps, France, and Piedmont.

ON THE CRYSTALLISATION OF SULPHUR.

By M. CH. BRAME.

M. Despretz read a communication from M. Brame, of which the following is a resumé:—

M. Mitscherlich having obtained, as is well known, sulphur in oblique prisms by fusion, and having also shown that in sulphuret of carbon there is formed, as Haidy had determined, an octahedron with a rhombic base, that is to say, possessing the form of the crystals of native sulphur, it has been for some time admitted that sulphur will crystallise in oblique prisms by fusion, and in octahedra with rhombic base from solutions. Further, it was conceived that the first changed, in the course of time, into small octahedra, and that hence arose their opacity. M. Isidore Pierre, Deville, and Pasteur have, however, shown, that oblique prisms may be obtained from solutions of sulphur. M. Brame now shows that sulphur crystallises in oblique prisms only when the liquid sulphur is in excess, which occurs even when the layer is very fine. In the contrary case, the fused sulphur constantly crystallises in octahedra with a rhombic base. On division, the fused sulphur separates into a multitude of small drops, which cool on the surface, and become covered with a more or less solid tegument; according to the degree of fineness of which, a deeply modified octahedron is obtained often reduced to an octahedron with an ordinary rhombic base.

CHEMICAL SOCIETY.

Meeting of December 17.

W. A. MILLER, M.D., F.R.S., in the Chair.

The minutes of the preceding meeting having been read and confirmed, the chairman read a list of books and specimens presented to the society. The following gentlemen were elected fellows of the society:—Mr. Beasley, of Banbury; Mr. Barnes, of New Bond-street; Mr. Stone, of Balliol College, Oxford; and Mr. Brunton, chemist to the Gutta Serena Company.

The secretary read a communication from Mr. Edwards, of Liverpool, on the action of arsenious acid upon albumen, in which the author stated that the results of recent experiments confirmed him in the opinion, that albumen does not form with arsenious acid a chemical compound in the animal economy, as stated by Liebig; and that the experiments adduced by Dr. Muspratt in support of Liebig's theory tend rather to the support of the contrary opinion.

The secretary then read a paper from Mr. Rowney, of Edinburgh, on the action of ammonia and sebatic ether, whence it would appear that he has been experimenting in the same direction as M. Bois, whose interesting communication on this subject to the Paris Academy of Sciences we noticed at page 104 of the CHEMICAL RECORD.

Some interesting specimens of deposits from oil of bitter almonds were presented to the society by Mr. Whipple, F.C.S., in reference to which the following extract from Dr. Pereira's "Elements of Materia Medica," was read by the secretary:—

* Professor Tennant's Lecture in our next.

"A crystalline matter is frequently deposited by oil of bitter almonds, when it has been kept for some time. Exposure to air, by which the oil is enabled to absorb oxygen, and the removal of hydrocyanic acid, facilitate the deposition. In 1822, Grischow and Bahlman (*Berl. Jahrb. d. Pharm.* 1822, p. 158); and in 1823, Stange (Buchner's Repert. xiv. 329, xvi. 82) declared the crystals to be those of benzoic acid (described at p. 937); a statement which was confirmed in 1830 by Robiquet and Boutron (*Ann. de Chim. et des Phys.* xlv. 864). I have met with three kinds of crystalline deposit, differing essentially from each other, and from benzoic acid. 1st. One of these is characterised by the *emerald green* colour which it produces when dropped into oil of vitriol. In a few minutes, however, the green changes to red. This deposit is orange-yellow, soluble in boiling water, alcohol, and ether; when the alcoholic solutions cool, numerous white light pearly crystalline plates, resembling 'crystalline boracic acid' are deposited. If these white crystals be dropped into oil of vitriol, they also become emerald green, but very slightly so; the mother liquor is rendered much more intensely green by oil of vitriol. Boiled with caustic potash they give out ammonia. By keeping for two years in a stoppered bottle, both the raw and purified crystals lost the property of becoming green by oil of vitriol, they now became red on the addition of this liquid; and the crystals, on being re-dissolved in alcohol and re-crystallised, were scarcely coloured on the addition of oil of vitriol. From raw oil of bitter almonds, washed with solution of potash, I have obtained, at the end of 24 hours, crystals which, like the above, became green on the addition of oil of vitriol.

"2nd. A second crystalline deposit is characterised by the *cherry-red* colour which it assumes when dropped into oil of vitriol, and by its not evolving ammonia when boiled with caustic potash. Its appearance resembles solid oil of anise. When dissolved in boiling alcohol and re-crystallised, it yields silky prismatic crystals, somewhat similar to those of nitrate of ammonia. At the end of two years it had almost lost its quality of being reduced by oil of vitriol; but, when boiled by this liquor, it gave out a crystalline sublimate. Heated with a solution of potash, it evolved faint traces of ammonia.

"The third kind of deposit I did not receive until after it had been digested in alcohol. A short notice of it has been given by Dr. Letheby (*Lond. Med. Gaz.*, xxvi. 67). The crystals are small, acicular, and lemon-yellow; they dissolve in oil of vitriol, forming a *yellow or orange-coloured* solution. They are insoluble in water and alcohol. When heated they fuse, but, unlike the two preceding deposits, do not sublime. They do not evolve ammonia when heated with a solution of caustic potash. At the end of two years these crystals were unchanged. In all the cases in which they were found, the oil had been put aside contaminated with water."

The first and third of the deposits above referred to were furnished to Dr. Pereira by Mr. Whipple, and were similar to those presented to the society.

The analyses of the minerals mentioned by Mr. Field, in his communication to the society at the previous meeting, are as follows:—

1. Mineral resembling the grey antimonious copper, found in several parts of Chili; 100 parts gave:—

Gold	0.003
Silver	0.075
Copper	36.720
Iron	1.232
Zinc	7.260
Antimony	20.284
Arsenic	3.919
Sulphur	30.350
	99.836

2. *Lapis lazuli*, found in large quantities in the Cordilleras of the Andes; 100 parts gave:—

Silica	37.60
Alumina	11.21
Sulphur	1.65
Iron	0.08
Magnesia	0.36

Soda	9.66
Carbonic Acid	16.06
Lime	24.10
	99.71

Amongst the various specimens presented, were samples of the chlorate, nitrate, mono-carbonate, benzoate, oxalate, borate, and sulphate of magnesia; sulphate of magnesia and copper; carbonate of magnesia and potash; sulphate of magnesia and soda; and bicarbonate of magnesia in solution; from Messrs. Dinneford and Co.

Specimens of the alkaloids, &c., were presented by Messrs. Powers and Wightman, of New York; and specimens of starch, gum, sugar, acetic acid, &c., from potatoes, by Mr. Jennings.

The Exhibition commissioners for British Guiana presented specimens of the productions of that colony, and the Austrian commissioners samples of mercury and cinnabar from Idria, white lead from Kremnitz, lead from Bleyberg (said not to contain silver), &c.

Mr. Spence, of Pendleton works, presented a very fine specimen of alum, manufactured according to his patent process. Messrs. Pontifex and Wood, of Millwall, presented specimens of tartaric and citric acids, and of white lead in various stages of the manufacture.

M. SERVANT ON THE PREPARATION OF OTTO OF ROSES.

On the 9th of January, 1851, the writer distilled by steam 75 kilogrammes of rose petals, and obtained, as prescribed by the Paris codex, 75 litres of distilled water. The small quantity of essence of roses which resulted from this distillation was received with care, by means of the *éolipile*, and put into a test glass. It was brown, brilliant, and crystallised in small plates; when treated with rectified sulphuric ether, and the liquor filtered, then evaporated, first in a porcelain capsule, then finally by a sand bath, so as to chase away the remnant of the ether, the residue, still warm, was found by weighing to amount to a little more than two grammes. Some minutes afterwards the essence became solidified, in which state it was limpid, devoid of colour, transparent, very aromatic, resembling ice in appearance, and studded with a small circular crystals. It still maintained its solidity at the temperature of 20° C.

It appears, then (remarks the writer), that the essence of roses is contained in the flowers, operated upon in the approximative proportion of a 37,000th part, after abstracting the amount contained in the distilled water, which is very odorous.

From the above data 37,000 times 500 pounds of roses would be required to obtain 500 grammes of essence.

However small may be the quantity of essence of roses which we have obtained this year, it is nevertheless very superior to that produced last season; 100 kilogrammes of roses distilled by the same procedure, in the same alembic, yielded so small an amount of essence, that we did not attempt to preserve it. In 1846, on the contrary, we obtained nearly 10 grammes of essence from 96 kilogrammes of roses.

The commercial essence, or otto of rose, which comes from the east, usually sells for 28 or 30 francs per 30 grammes. Although roses in these countries are cultivated in enormous quantities, and contain a much larger amount of essence than the roses of France, it is probable, nevertheless, that the essence from this source is never pure, but is contaminated with other essences of less value.

Besides the essence of rose, there can also be obtained from a particular species of geranium, viz., *pelargonium odoratissimum*, an essence very analogous in chemical and physical qualities. The discovery appears to have been made by M. Recluse, acting for M. Tissier, pharmacien, and professor of chemistry at Lyons. 1590 grammes of leaves of the rose-smelling pelargonium, having been exposed to distillation, yielded eight grammes of volatile concrete oil, coagulable at 18° C., and similar in odour to that obtained from the rose.

This discovery was made some time before the year 1819,

since which period the species of pelargonium in question has been largely cultivated in France for perfumery purposes, chiefly in the provinces of Seine and Oise. 100 pounds of leaves yield from 54 to 55 grammes of essential oil, and these leaves are sold for 30 to 35 francs per 100 lbs. The oil of geranium was at first very dear, but its price has fallen from 30 francs to 26, 20, 16, and at length 12 francs. The oil of geranium of Paris has a green colour—that of Nice is colourless. It is employed for falsifying the true otto of roses, after having been falsified in its turn.—*Journ. de Chem. Med.*, No. xi., Novembre.

CASE OF POISONING BY FOUR GRAMMES OF CAMPHOR, ADMINISTERED IN THE FORM OF LAVEMENT.

A case of this kind has lately occurred in the practice of Dr. Aran, and is important, inasmuch as the above amount of camphor is prescribed as proper for a lavement in the greater number of formularies. We have already remarked in this journal, writes the editor of the *Bulletin Général de Thérapeutique*, how the dose of camphor prescribed in formularies is greater than the amount which may, with propriety, be denominated *Therapeutic*. The case announced by Dr. Aran will have the advantage of directing the attention of prescribers to a vicious, and even dangerous formula, as well as to the specific case of poisoning.

Relative to the same subject, *M. Mascarel* relates the following case:—"In the month of August, 1851, I was attending upon the sister of an ecclesiastic. She was unmarried, and forty-nine years old. For a considerable period she had been suffering from pains connected more or less with a critical period of life. For the alleviation of these I employed baths, revulsives, and antispasmodics, in turn, without much effect. I then had recourse, one morning before breakfast, and to the exclusion of every other treatment, to simple enema, followed by another of the following composition:—Yolk of eggs; No. 1 camphor, 4 grammes; water, 300 grammes; laudanum of Sydenham, 2 drops. Some minutes after the administration of this lavement, which was completely retained, my patient experienced a sensation of heat in the rectum, accompanied by a general trembling, without cold except the lower limbs. The head now drooped forwards, all the facial muscles became contracted, there was præcordial oppression, frequent small pulse, and general appearance of approaching death. The patient stammered out a few words, and then lost her voice altogether. The assistants in great terror sent for me, and on my arrival I administered a purgative lavement of common salt, and employed sinapisms and frictions. For more than one hour the patient could not articulate, but afterwards she rallied, and finally recovered after remaining some days in a state of great prostration.—*Bulletin Général de Thérapeutique*, tome xli., 7^{me} Livraison, October 16, 1851.

ON THE FALSIFICATION OF WINES AND THE MEANS OF DISCOVERING THEM.

In No. 11 (for November, 1851) of the *Journal de Chimie Médicale*, M. E. Cottureau concludes his treatise on the above important subject. The first division of this part of his subject relates to the salts which are contained in wines. *Sulphate of Potash* is thus determined:—Take a determinate volume of wine, evaporate it to dryness, and incinerate it until all organic matters are destroyed. Digest the ashes in distilled water, acidulated by a little nitric acid. Next filter the liquor, and precipitate the sulphuric acid by means of nitrate of baryta. Collect the precipitate on a filter, wash it well with distilled water, slightly acidulated by nitric acid. Dry it carefully, heat it in a platinum crucible, and finally weigh. Thus we have data for calculating the amount of sulphuric acid, and consequently of sulphate of potash, originally present.

Chloride of Sodium, or Potassium.—Into the filtered liquor resulting from the preceding operation, and added to the washings from the sulphate of baryta, an excess of nitrate of silver is to be added, which gives rise to the white curdy precipitate of chloride of silver. This precipitate, collected on a

filter, washed, heated, and finally weighed, determines the amount of joint chlorides of sodium and potassium.

For the purpose of discovering the bases, the washings resulting from the residue of evaporation of another volume of wine is treated either (1) by perchloric or by tartaric acid, forming respectively a precipitate of perchlorate or tartrate of potash, from which the amount of potash may be calculated; (2) by antimoniate of potash, which occasions a precipitate of antimoniate of soda, from which the amount of soda is calculated.

Phosphate of Alumina.—After having united the acid liquors resulting from the lixiviation of the ashes formed by evaporating another known volume of wine, an excess of pure ammonia is thrown in, by which phosphate of alumina along with associated oxide of iron, and alumina resulting from the decomposition of the tartrates of these bases, are thrown down. By estimating in the usual way the amount of phosphoric acid existing in this precipitate, the quantity of alumina necessary for combining with it may be determined; hence the quantity of phosphate of alumina, tartrate of iron, and tartrate of alumina. A fresh amount of ashes is now procured by evaporating another known volume of wine, and calcining the residue. After having treated these ashes by water, acidulated with a little nitric or nitromuriatic acid, the filtrate is then mixed with an excess of ammonia, which precipitates the phosphate of alumina—alumina and oxide of iron arising from the decomposition of the tartrates of these bases. The precipitate, being washed, is treated with a hot solution of caustic potash, in a capsule of porcelain; all the alumina is dissolved, whether free or in combination with phosphoric acid, which combines with an equivalent amount of potash in exchange. The insoluble oxide of iron is then again washed upon a filter, by means of distilled water, dried, calcined in a platinum crucible, and finally weighed. From its weight the amount of tartrate of iron is deduced. The alumina is now precipitated from its alkaline solution by means of hydrochlorate of ammonia, washed, dried, and weighed. By subtracting the amount of this from the alumina primitively allied with the phosphoric acid, and found by the preceding operation, the amount of alumina which was united with the tartaric acid is arrived at, and consequently the amount of tartrate of alumina.

Tartrate of Lime.—The ammoniacal liquor separated from the precipitated phosphate of alumina, oxide of iron, and alumina, in the preceding operation, is treated by an excess of oxalate of ammonia, which precipitates the lime in the state of oxalate. This latter, being received on a filter, washed and dried, is calcined several times in succession with some drops of sulphuric acid, to change it into sulphate of lime. The sulphate of lime thus obtained is next weighed, and, the amount of lime entering into its composition being known, calculation easily demonstrates the amount of tartrate of lime.

"Such," remarks the editor of the *Journal de Chimie Médicale*, "is the process pursued by M. Fauré, for the analysis of wines of the Gironde; but it will require modification to suit it to many conditions, for this chemist has not spoken in his analyses of any estimation of potash, nor has he indicated quantitatively the existence of soda. M. Fauré has also, in our opinion, committed an error in believing that, by the addition of ammonia in the acid product of the lixiviation of the ashes of wine by the aid of acidulated water, there would merely result a precipitate of alumina and oxide of iron. In point of fact, the phosphate of alumina is equally and simultaneously precipitated in this operation."

ON THE WELDING OF TWO PIECES OF STEEL OF DIFFERENT KINDS.

By M. BOISSNOT, Pharmacien, of Chalon-sur Saône.

A very curious fact, which will be eagerly laid hold of by M. Bontigny (d'Evreux), has just occurred in the sugar refinery des Allouettes, near Chalon-sur-Saône.

This establishment possesses four turbines of Messrs. Seyrig and Co., for the purpose of clearing raw sugar. During this operation the rotatory motion of the apparatus acquires the velocity of from 1200 to 1500 revolutions per

minute, so that occasionally the heat generated by this rotation is sufficiently intense to convert into the state of spheroidal vapour a portion of the oil in which the axis works, thus giving rise to an empyreumatic odour, and an inflammable gas. When this phenomenon presents itself, the machines are obliged to be stopped for awhile, in order to allow the heated axis to cool.

On the 2nd of April last, one of these turbines, after having been at work for the space of five minutes, *stopped all of a sudden*, without having given rise to any empyreumatic smell, but after having emitted a sound like that of a file working against iron. Various trials were made to set the turbine again in motion, but in vain, so at last the machine was dismantled, when the surprise was great to find the pivot firmly welded to the steel bearing-plate, although surrounded, for the purpose of lubrication, with a copious supply of oil. The welded surface was about three centimetres in diameter; surrounding it was a ring of fused metal, so hard that the file would not touch it, and which had to be hammered away. An attempt was also made to sever the axis from its bearing also by hammering, but without success, and eventually the two welded pieces were separated by turning in a lathe, when the welding operation was found to be complete throughout. The only ready explanation of this curious result seems to be, that the oil placed around the revolving pivot, for the purpose of lubricating it, was converted into the so-called spheroidal condition of vapour, on the occurrence of which all lubrication and even contact ceased; thus allowing the two steel pieces in contact with each other to acquire sufficient heat for welding, whereupon they united, and, motion ceasing, the temperature fell. The spheroidal condition of oil afterwards changed to ordinary vapour, then to liquid—which, coming into contact with the two pieces of steel, now united into one, tempered them hard.—*Jour. de Chim. Med.*, No. 11., Nov., 1861.

ON THE INFLUENCE OF SURFACE ATTRACTION ON CHEMICAL PRECIPITATION.

By Dr. P. KREMERS.

It is well known that certain chemical precipitates carry down along with them an amount more or less of the precipitating body, from which they either cannot be separated, or the separation is effected with great difficulty. This is particularly the case in the precipitation of phosphoric acid as the ammonio-phosphate of magnesia, and is of the greater importance that this reaction is so commonly occurring in the practice of analytical chemistry.

0.9496 grammes of pyro phosphate of soda ($\text{PO}_3, 2\text{Na O}$) were converted into common phosphate by long digestion in nitric acid. It was then mixed with sal-ammoniac and ammonia, and added to a solution of sulphate of magnesia, in quantity double to that necessary for complete precipitation, as indicated by theory. The resulting precipitate, dried and heated, amounted to 0.8264 grammes of pyrophosphate of magnesia. Calculation, however, indicated only 0.793 grammes. Hence, there was an excess of 0.0334 grammes, or 4.21 per cent. This precipitate, after being ignited, was dissolved in muriatic acid, and reprecipitated by ammonia. It now weighed 0.7866 grammes, and corresponded within 0.0074 grammes to the weight indicated by calculation.

In the filtrate the magnesia was present, which, during the first precipitation, had combined with the ammonio-magnesian phosphate. For the purpose of washing this precipitate, I employed a mixture of three parts water and one part of ammonia solution (sp. gr. 0.96), as directed by Heinrich Rose. Perhaps these are the only proportions in which the precipitate is quite insoluble. A second experiment was performed in the following manner:—0.9384 grammes of pyrophosphate of soda having, as in the preceding instance, been treated by nitric acid, until converted into common phosphate, to this was added a mixture of sal-ammoniac, ammonia, and sulphate of magnesia, until precipitation had entirely ceased, and a small excess of precipitant remained. The precipitate obtained by this means weighed, after heat-

ing, 0.7866 grammes. According to calculation, it should have been 0.7836 grammes; hence there was a slight discrepancy of 0.003 grammes or 0.38 per cent.; still less was the increase when the precipitation was effected by means of chloride of magnesium. It now amounted to 0.003 per cent., and might, therefore, be attributed to loss during manipulation.

It follows, then, from the preceding experiments, that, in the estimation of phosphoric acid, as ammonio-magnesian phosphate, there is always a slight excess over the amount indicated by calculation—of no practical consequence, provided a large excess of magnesia salt be not employed.—*Pogg. Annalen*. Band lxxxiv. Stück 1, No. 9.

INVESTIGATIONS ON THE SO-CALLED SPHEROIDAL CONDITION OF WATER,

By DR. P. J. VAN KERKHOFF,

Professor of Chemistry and Physics in the Royal Athenaeum of Maastricht.

Poggendorff's *Annalen*, band lxxxiv. stück 1, No. 9, contains a long article on the above subject, which would not be interesting to the general chemical reader; and of which, therefore, an indication for reference may suffice. Dr. Van Kerkhoff adverts to the communications on this subject by Herrn Schnaues,* Böttger,† and Buff;‡ the observations contained in which he in the main confirms, and then proceeds to further develop the condition of sphericity so called.

It would appear, however, to follow from Van Kerkhoff's experiments, that the term spheroid state is misapplied to the class of phenomena in question.

OPIUM,

As is well known to chemists, is the concrete juice of the stems and capsules of many plants of the poppy tribe, more especially of that which is known as the *papaver somniferum*. The most important of its constituents are the alkaloids morphia, narcotine, and codeia; but its medicinal properties are chiefly due to the presence of morphia.

The proportions of morphia are far from being the same for all kinds of opium, and it is even to the difference in these proportions that the different varieties of opium are owing. Samples the most dissimilar in this respect are seen in the drug market; and there is even found adulterated opium—opium which does not contain a particle of morphia.

To prevent such frauds (by which even the patients in the hospitals of Paris have suffered, and which are effected by mixing with opium of bad quality salop, grains of sesame, extract of celandine, and other substances), M. Chevalier proposes that, henceforth, no opium be sold which has not been properly analysed.

A notion long prevailed, that the proportions of morphia increased or diminished according to the temperature of the localities where the poppies were grown; and thus was explained the preference given, by the trade, to the opium of Thebes over that of Constantinople. But experience has contradicted this notion; and, it is now admitted, that the difference in the quantities of morphia are due to the different varieties of the poppy, and also to the seasons in which the opium is collected.

With regard to the first of these causes, it has been observed that, in general, the long-headed *papaver somniferum* yields more morphia than the round-headed one; and, with regard to the second, that in general the morphia diminishes as we approach the maturity of the fruit.

As soon as it was known that heat had nothing to do with the production of morphia, efforts were made to turn the indigenous poppies to good account, and to free Europe from the enormous tribute which she yearly paid to Asia. These efforts, as well in France as in Algeria, have been successful.

* Pogg. Ann., Band 79, S. 432.

† Ut. Supra, Band 81, S. 320.

‡ Ann. der Chem. und Pharm., Band 77, Sec. 1,

Samples obtained in Africa, in 1843-4, yielded (according to the analysis of M. Payen) 4.84 and 5.02 of morphine. The opiums produced in Auvergne, by M. Auberger, have yielded as much as 6.63 to 8.57 of morphia; and mention has been made of some varieties which yielded the enormous proportion of 17 per cent. Now (according to the analysis of M. Guibourt), this is the proportion of morphia in the best kinds of Smyrna opium.—*L'illustration*.

SOCIETY OF ARTS.

According to an announcement of the Society of Arts, the following is the first portion of the course of lectures on the probable results of the Exhibition, which his Royal Highness Prince Albert has the merit of suggesting:—

1851.—Nov. 26, Rev. W. Whewell, DD., F.R.S., Master of Trinity, inaugural lecture on the General Bearing of the Exhibition on the Progress of Arts and Sciences.

December 2, Sir H. De la Beche, C.B., F.R.S., on Mining, Quarrying, and Metallurgical Processes and Products.

December 10, Professor Owen, F.R.S., on Animal Raw Products.

December 17, Mr. Jacob Bell, chemist and druggist, Chemical and Pharmaceutical Processes and Products.

1852.—January 7, Dr. Lyon Playfair, C.B., F.R.S., on the Chemical Principles Involved in the Manufactures shown at the Exhibition, as a proof of the Necessity of an Industrial Education.

January 14, Dr. Lindley, F.R.S., on Substances used as Food.

January 21, Professor Edward Solly, F.R.S., on Vegetable Substances used in the Arts and Manufactures, in relation to Commerce generally.

January 28, Rev. Professor R. Willis, F.R.S., Machines and Tools for Working in Metal, Wood, and other Materials.

February 4, Mr. J. Glaisher, F.R.S., Philosophical Instruments and Processes.

February 18, Captain Washington, R.N., Shipping, particularly Life Boats in Class VIII.

March 3, Professor J. Forbes Royle, F.R.S., on the Manufactures of India.

At a meeting of the council of the Society of Arts, Manufactures, and Commerce, held November 17, 1851, the following resolutions were passed:—

"That the advancement of the objects of the Society of Arts, namely, the promotion of arts, manufactures, and commerce, is greatly dependent on the freedom and facilities of postal communication.

"That the present rates for the transit of ship letters are heavy, very disproportionate to the low and generally uniform inland rates, now happily adopted by Great Britain and most nations, and are a great impediment to correspondence, especially between Great Britain and her colonies,

"That the cost for ship transit letters ought not to be regulated by the cost of the packets, which Government maintains for other purposes besides postal communication, but that it would be a wise policy to render the transit rate both uniform for all distances and low as possible.

"That the society will lend its aid to the association formed to obtain a uniform low rate of charge, and that the council tender the use of the rooms of the society to the association, consisting of the following gentlemen, who during the Exhibition formed an association to obtain postal communication between all nations, by means of the most practicable uniform charge for ship transit of letters and printed papers:—Lord Ashburton, Sir J. P. Boileau, Bart., Sir John Burgoyne, K.C.B., Elihu Burritt, Esq., William Brown, Esq., M.P., Chevalier de Burg (Austria), Henry Cole, Esq., C.B., Professor Daubeny, C. Wentworth Dilke, Esq., Baron Charles Dupin (France), Professor Hancock (Dublin), J. C. E. Kennedy (America), J. L. Levevre, Esq., C.B., Chevalier Leucias (Sardinia), Dr. Lindley, Right Hon. T. M. Gibson, M.P., G. Moffatt, Esq., Dr. Lyon Playfair, C.B., Col. Sir Wm. Reid, K.C.B., Herr Von Viebahn (Zollverein), the Hon. C. P. Villiers, M.P., D. M. d'Ysaai (Spain)."

Chemical Record

AND

DRUG PRICE CURRENT,

SATURDAY, NOVEMBER 23, 1851.

THE DISCONTINUANCE OF DR. PEREIRA'S LECTURES, AND ITS CAUSE.

It will be remembered by our readers that Dr. Pereira, on the occasion of his second lecture this session before the Pharmaceutical Society, expressed, among other reasons wherefore his lectures should not go forth to the public, the following:—"I frequently, gentlemen, said he, make use of language, in the freedom of a conversational lecture, which is unadapted for print. I object, therefore, to my lectures being published for this reason. Again—I frequently consider it my duty to comment with severity on the impropriety of certain processes and preparations of the London pharmacopoeia; now, what, gentlemen, will my brethren of the College of Physicians say, when they see those comments in print?" In these expressions we recognise the sentiment of a highly delicate and sensitive mind—tremblingly alive to the influence of the world's reproach; generous, disinterested, and pure. We can assure Dr. Pereira, that our estimation of him as a man, a gentleman, or a philosopher, is none the less, that he gave us some little trouble, a few weeks ago, by objecting to sell a student's ticket to our reporter. Philosophers are proverbially wayward, crotchety, irritable,—creatures of impulse; they are prone to act on the sudden, and their actions are not always such as the spirit of abstract propriety can sanction or approve.

"*Cereus in vitium flecti, monitoribus asper,*" we believe was an expression employed by Horace to characterise the wayward tendencies of youth. They are occasionally applicable to creatures of larger growth; and Dr. Pereira gave us reason to feel that they were not misapplied to him.

Acting on the impulse of a moment, he would have prevented our reporting his lectures altogether—would have appeared before the world as a morose, sullen, ungenerous man—not characterised by the liberal views which prompt modern philosophers to scatter their learning broadcast over the world, but moulded on the type of the alchemists of yore, whose great aim it was to keep their learning concealed from the world's vulgar gaze.

Dr. Pereira having put his light under a bushel, we rescued it, and displayed its lustrous beams to an admiring world. He was at first angry, but soon grew mild; our genial influence was not thrown away; and it is now our pride and pleasure to state, that the salutary restraint of our reporter had the effect of purifying Dr. Pereira's language, and improving his style. His verbiage became more polished; his jokes were remodelled on a new basis, so as to offend the susceptibilities of none; and as to his critiques on the processes of the London pharmacopoeia, they were made in a style so courteous, that even the ghost of a Halford, that archetype of all medical suavity, could scarcely have taken offence.

Let not Dr. Pereira hesitate, therefore, to accept the assurance of our satisfaction. He deserves all the commendation we have ever bestowed upon him; and his determination

not to lecture again at the Pharmaceutical Society confirms us in every opinion we had formed of his delicacy of mind, his shrinking from all that is base and impure. As soon as the scandalous transactions of bribery at St. Alban's became patent before all the world, we perceived that a gentleman, endowed with the tender susceptibilities of Dr. Pereira, could remain no longer attached to the Pharmaceutical Society, until remodelled on a new basis. Honour to the sentiment—honour to the man!

Our satisfaction at the course which Dr. Pereira has adopted would be alloyed with deep regret, did it involve a loss to the pharmaceutical public of Dr. Pereira's valuable course of lectures. Such a calamity will not occur. After waiting awhile, to see whether, in the event of the remodeling of the Pharmaceutical Society, Dr. Pereira may not be induced to recommence his lectures—we purpose, if the doctor be still inflexible, to avail ourselves of short-hand reports made at the London Hospital, which institution, we need scarcely indicate, also enjoys the advantage of Dr. Pereira's instruction in materia medica.

THE BOA CONSTRICTOR AND HIS MEAL.

Our readers will remember reading an announcement which has been going the round of the papers, to the effect that a boa constrictor in the Zoological Gardens, acting in direct contravention to all the preconceived notions of serpent wisdom, had mistaken a railway wrapper for a living rabbit, and eaten the former at a meal; then, after a five weeks' rumination, had rejected the wrapper again. So extraordinary a manifestation of serpent voracity might well provoke some argument. Was it accident—was it predilection—was it simply a grotesque display of unaccountable taste? There are not wanting those who have advocated each of these opinions in turn, but the latter is untenable, if, as naturalists tell us, serpents have no taste, and that they are deprived of the most agreeable of the five senses; perhaps, only to enhance the acuteness of the other four—for to aver that serpents are not wise would be discordant with all testimony in every age.

We hear of men eating knives and forks, nay, even swords, out of bravado, or to win a bet; did the boa constrictor eat his blanket for any such reason as this? Who knows but that actuated by a desire to prove his superiority over his scaly brethren, he did not express by some familiar mode, cognisant to serpent comprehension, but not to man's, some such sentiment as this—"Look ye here, my friends; cower and slink far away, crawl off abashed, write yourselves down the donkeys of the serpent tribe as you are; here's my rabbit against my friend the rattlesnake's mouse, that none of you can do this?" The notion, we say, is not altogether impossible, and could not easily be refuted if advanced with a little plausible argumentation. Other people venture an assumption, that the scaly denizen of a tropical forest swallowed his blanket in a sort of suicidal desperation, so common to human beings in this gloomy month, and from which it is possible that serpents even may not be exempt.

Now, we differ, *toto celo*, from all the foregoing hypotheses; and, without going the length of averring them to be necessarily incorrect for all boa constrictors, under all possible circumstances, we will make bold to offer the

opinion, that the real cause which determined the boa constrictor in question to eat his blanket was—because he *couldn't help it*—a very powerful influence, when properly brought to bear, whether on boa constrictors or on men.

If the structure and arrangement of a boa constrictor's teeth be well observed, it will be seen that they *all look backwards*; so that the prey once firmly grasped cannot easily be disgorged. Were it possible for a poor rabbit to apostrophise his captor, and that the captor were moved by the prayer, he would be obliged to reply after the fashion of other boa constrictors we could name, "Very sorry, my friend—cannot entertain your proposition; I really have no discretionary power." Once within the serpent's jaws, every convulsive movement of the throat—every kick, struggle, or twist, whether of the serpent or his prey—carries the latter further on, just as a barley ear, placed under the sleeve, very soon manages to crawl up to the shoulder, and thence farther still. We once remember seeing a boa constrictor, in seizing his rabbit, lay hold of, by mistake, his keeper's thumb also. Man and serpent both understood each other perfectly well; there was only one thing to be done—the hand must be torn away by main force, and the teeth along with it, if needs be. The serpent seemed to be impressed with the conviction to its fullest extent, and we fancied we saw an expression of regret beaming through his little eyes. The keeper gave one tug, and out came his hand, bringing along with it one only of the serpent's teeth—no more—the rest remained firmly in their sockets, tearing their way through the skin like the claws of a cat. The hand being extracted, serpent and keeper congratulated each other on the felicitous issue of affairs, the man patting the snake on the back, and the latter wagging his tail in recognition. So we hold it neither to be proven that the boa constrictor in the Zoological Society's gardens swallowed his blanket, neither for a bet, nor because of his romantic tendencies, neither urged by suicidal tendencies, nor out of spite, but simply because *he couldn't help it*, as we have said. The blanket being seized, there was no alternative but to swallow it outright; the die was cast—the destiny unbending—the serpent must gorge away, or else cast a slur over the fair fame of all serpents for wisdom so universally accorded.

But what was to have become of the blanket? That was the question for a long time. A wide spread interest was taken in the future welfare of the reptile by all classes. Ladies in particular manifested especial interest in the boa constrictor, and asked what would be his fate. The interest on their part for a serpent is natural enough and need not be pointed out; but we, as chemists, have just reason to manifest an interest too. Our friend, the boa constrictor, yields us far too great an accession to our laboratory that we should have been indifferent to his fate..... We beg therefore to announce to old and young gentlemen and ladies, especially to the latter—we beg leave to announce, in short, to the whole serpent-loving community, that there was nothing serious in the case of our friend from the first.

Throughout all this anxious affair, from the period when he first grasped the outlying woolly filaments to the time when he found the coverlet wriggling down his distended throat—to the moment when it became tranquilly deposited in his capacious maw, and finally became ejected—the ser-

pent never once lost his presence of mind; but, making the best of a bad bargain, resolutely performed his contract in a way that man might often emulate with advantage to himself. So much fixedness of purpose—so much ratiocination—such an amount of instinctive philosophy brought to bear on an end, we have seldom seen.

We only wonder that, the blanket being swallowed, the serpent did not go on with his digestive operation; for wool is only a sort of horn pulled out into filaments; and horn, if exposed to the action of a Papin's digester, will make a not altogether contemptible soup. In fact, the perfect digestion of the blanket in the reptile's maw was only a work of time, and already the woollen fabric is very much decomposed and shrunk. Indeed, had it not been—had it retained its previous elasticity—we imagine no effort of the animal would have been competent to eject it as it came.

SPECIFICATIONS OF CHEMICAL PATENTS.

Robert Oxland and John Oxland, both of Plymouth, chemists, for "improvements in the manufacture and refining of sugar." Patent dated May 15, 1861. Enrolled Nov. 16, 1861.

The patentees' improvement consists in the use of phosphoric acid in a combined state, in defecating, refining, and decolorising sugar.

Before describing these improvements, the patentees refer to their previous patent, of the date of April 26, 1849; in which they claimed the use of acetate of alumina in defecating and refining sugar; the alumina so employed being directed to be removed from the saccharine solutions by the use of lime.

The patentees, however, find that the whole of the alumina is not removable by this means from the solution, but that both it and the molasses contain alumina; they therefore recommend the employment of a solution of superphosphate of alumina, or superphosphate of lime, to the syrup, in all cases in which the acetate of alumina has been employed. The syrup is boiled for two or three minutes, and the excess of acid neutralised by addition of either aluminate of lime, saccharate of lime, lime water, or milk of lime. Instead of acetate of alumina alone, or in combination with phosphoric acid, phosphates may be used to produce the same effect. Their employment also is attended with the additional advantage, that the re-agent used is not left in solution in the saccharine solutions.

If, for instance, it be desired to treat saccharine liquids, such as an ordinary solution of Muscovado sugar, the following process is to be adopted:—The sugar being dissolved as usual in the blow-up pan, no blood is added, but a soluble phosphate is dissolved in the water used for the solution of the sugar. One and a half pound of crystallised phosphate of soda will usually be found to be a suitable proportion for one ton of sugar. The syrup thus formed is brought to the boiling point, and a sufficient quantity of either saccharate of lime, milk of lime, lime water, or aluminate of lime is added, to neutralise any acidity which may be present, after which the syrup, having been brought to the density of from 26° to 30° Beaumé, is passed through bag filters of the ordinary make, and is thus defecated. Water is then put through the filters, to dissolve out all the saccharine matter left therein, and the solution is employed to dissolve the next batch of sugar operated upon. The syrup, as thus obtained, may be either at once placed in the vacuum pan, or be first treated with a solution of from five to eight per cent. or more of hydrate of alumina (dried at 212°), which, being diffused through it, will effect the removal of some colouring matter remaining after the previous process, and thus render the use of animal charcoal unnecessary.

The alumina mixed with the other residue on the filter bags may be separated therefrom by ignition, and the pro-

duct applied to the preparation of hydrate of alumina, or of superphosphate of alumina, or, when well washed, it may be mixed with fresh hydrate of lime, and used in that state.

In the application of superphosphate of alumina to the purposes herein specified, this salt is added to the water used in the blow-up pan, in the proportion of about six pounds of alumina dissolved in phosphoric acid for each ton of sugar. In bringing the syrup, at a density of from 26° to 30° Beaumé, to the boiling point, a sufficient quantity of either aluminate of lime, saccharate of lime, milk of lime, or lime water is added, as will serve to neutralise the excess of acid, after which the process is conducted as before described, and the alumina again recovered from the contents of the filter bags.

The patentees give the following directions for the preparation of the phosphoric acid employed in the manufacture of the superphosphate of alumina above mentioned. Bones are first calcined to whiteness, then ground, and digested in such a quantity of muriatic acid as will serve to dissolve out the carbonate of lime only; the residue is then washed and dried, and a sufficient quantity of water added to form a thin paste; sulphuric acid is then added in such proportion as will dissolve about 97 per cent. of the lime of the phosphate; this mixture is well stirred, and kept at a temperature of about 90° Fahr. for 24 hours, after which it is lixiviated with water, or with the washings after mentioned.

The first product gives a strong solution of phosphoric acid, and is employed for dissolving the alumina, whilst the subsequent washings are reserved for the lixiviation of fresh batches. By the action of phosphoric acid on alumina an insoluble phosphate of alumina is obtained; to this salt just as much phosphoric is added as will suffice to dissolve it, after which it is filtered off for use.

The aluminate of lime is made by dissolving alumina in a solution of caustic potash or soda, and precipitating with lime water or milk of lime; the aluminate of lime thus obtained is well washed, and, when used, is diffused through water.

In the treatment of sugar direct from the cane, the solution is first defecated with aluminate of lime, or lime rendered acid by means of superphosphate of alumina, or superphosphate of lime; and after two filtrations the solution is brought to a density of from 26° to 30° Beaumé, and then treated with phosphate of soda, as in the case above-mentioned, and boiled down in the usual way. The patentees give the preference to aluminate of lime over saccharate of lime, lime water, and milk of lime.

In the case of beetroot sugar, the same mode of treatment is adopted, but with the addition of larger proportions of aluminate or milk of lime.

The patentees do not limit themselves to the precise details above given, nor restrict themselves to the use of particular phosphates, but they claim—The use of phosphoric acid in a combined state.

A HINT TO M. JULLIEN.—We translate the following from the *Journal de Chimie Médicale*:—The Sieur Besse, dentist, was brought before the correctional police, in the department of la Meurthe, for illegal exercise of medicine and pharmacy, and the usurpation of titles. Having presented himself at Veteric, with a troupe composed of seven persons, all of them musicians, more or less ("*plus ou moins*," is the expression which we faithfully translate), after having indulged the audience with a symphony, he began to announce remedies against deafness, the tape-worm, corns, warts, tooth-ache, and chilblains. These impertinents actually dared to perform a serenade, and promulgate their announcement under the very windows of the mayor of the place—himself of the pharmaceutical profession. Besse also laid himself out for private consultations, for each of which he expected as a fee the sum of 11 francs 75 cents. For the purpose of enhancing his reputation, he also promised the inhabitants a balloon ascent; but, when the time arrived, he merely sent up a miserable mongolfier. The musical charlatan was condemned to six months' imprisonment, and a fine of 25 francs.

PRICE CURRENT OF DRUGS, &c.

Articles having bd. or bond annexed are sold at short price exclusive of duty; when no duty is affixed the article is free. Add 5 per cent. to the duty on all articles excepting those having an asterisk prefixed. F. means foreign; B.P. British possessions.

DRUGS, &c.		Price.			
		£. s. d.	£. s. d.		
ALKANET ROOT ..	..cwt.	1 14 6	2 10 0		
ALOE, Barbadoes ..	..	1 10 0	6 0 0		
Hepatica ..	..	1 10 0	5 0 0		
Cape ..	..	1 5 0	1 18 0		
ALUM, British ..	.. ton	7 10 0	8 5 0		
Roch ..	..cwt.	1 0 0	1 4 0		
AMBERGRIS, Grey ..	.. oz.	4 8 0	7 0 0		
ANCHOVINE ..	.. dbia. brl.	17 0 0	18 0 0		F. 2d. per lb.
ANGELICA ROOT ..	..cwt.	1 0 0	1 5 0		
ANNATTO, Flag ..	..lb.	1 0 0	1 2 0		
Roll ..	..	0 10 0	1 0 0		
ANTIMONY, Crude ..	..cwt.	1 8 0	0 0 0		
Ore ..	.. ton.	19 0 0	0 0 0		
Regulus Cps. ..	..cwt.	2 4 0	3 0 0		
Bowls ..	..	2 15 0	2 13 0		B. P. 6d. F. 2s.
ARROW ROOT ..	.. lb.	0 2 0	1 0 0		
ARSENIC, White ..	..cwt.	17 0 0	18 0 0		
Red ..	..	0 0 0	0 0 0		
English White ..	..	12 6 0	1 0 0		
Yellow ..	..	19 0 0	1 0 0		
ARGOL, Bologna ..	..cwt.	2 0 0	2 12 0		
Florence White ..	..	2 0 0	2 8 0		
Red ..	..	2 0 0	2 5 0		
Naples White ..	..	1 18 0	2 5 0		
Red ..	..	1 12 0	1 13 0		
Sicily White ..	..	1 8 0	1 16 0		
Red ..	..	1 8 0	1 10 0		
French ..	..	1 14 0	2 7 0		
Cape ..	..	1 15 0	2 11 0		
ASPHALTUM, Egyptian ..	..	2 10 0	4 15 0		
BORACIO ACID ..	..cwt.	2 12 0	2 13 0		
BALSAM, Canada ..	.. lb.	0 9 0	0 10 0		
Capivi ..	..	0 10 0	1 2 0		
Peru ..	..	5 0 0	5 2 0		
Tolu ..	..	3 6 0	4 0 0		
BARILLA, Spanish ..	.. ton	0 0 0	0 0 0		
Teneriffe ..	..	0 0 0	0 0 0		
Sicily ..	..	0 0 0	0 0 0		
East India ..	..	0 0 0	0 0 0		
BARK, Peruvian, pale ..	.. lb.	1 6 0	2 6 0		
Good ..	..	0 0 0	2 0 0		
Mld., do. ..	..	1 1 0	1 2 0		
Crown ..	..	1 3 0	2 2 0		
Yellow, Flat ..	..	3 0 0	4 4 0		
Quill ..	..	2 0 0	6 0 0		
Red, Flat ..	..	7 0 0	0 0 0		
Quill ..	..	3 0 0	4 6 0		
Cascarilla ..	..cwt.	1 0 0	1 15 0		
Quercitron ..	..	8 6 0	9 6 0		
Oak, English,....per load	..	13 0 0	14 0 0		
Foreignper ton.	..	3 0 0	6 5 0		
New S. W. ..	..	5 0 0	8 0 0		
BERBERIS, Bay ..	..cwt.	19 6 0	1 6 0		
Juniper, Italian ..	..	7 6 0	8 0 0		
German ..	..	8 0 0	12 0 0		
Turkey, Yellow ..	..	3 15 0	6 0 0		
Persian, do. ..	..	8 0 0	14 0 0		
BLACK LEAD, E. I. ..	..cwt.	5 0 0	16 0 0		
Malaga ..	..	10 0 0	1 5 0		
German ..	..	1 0 0	1 3 0		
Dust ..	..	9 0 0	12 0 0		
BORAX OR TINCAL ..	..cwt.	2 0 0	0 0 0		
E. I. Refined ..	..	2 17 0	2 18 0		
English Refined ..	..	3 10 0	3 12 0		
BRIMSTONE, Rough ..	.. ton	9 0 0	9 5 0		
Roll ..	..	12 0 0	0 0 0		
CAMPHOR, Unrefined ..	..cwt.	3 5 0	0 0 0		
Dutch ..	..	3 10 0	0 0 0		
* Refined ..	.. lb.	1 0 0	1 1 0		5s. per cwt.
CANTHARIDES, bd. ..	..	2 6 0	3 6 0		3d. per lb.
CAPERS, French ..	..cwt.	7 0 0	12 0 0		6d. .. B.P.
Capotts ..	..	6 0 0	7 10 0		
CARDAMOMS, Malabar ..	.. lb.	2 6 0	2 9 0		
Long Longs ..	..	2 10 0	3 0 0		
Ceylon ..	..	1 4 0	1 5 0		
CASTOR OIL, America ..	.. lb.	0 0 0	0 0 0		
E. I., bd. ..	..	0 2 0	0 4 0		
CHILLIS, E. I. ..	..cwt.	12 0 0	1 5 0		6d. per lb.
CHINA ROOT ..	..cwt.	10 0 0	1 0 0		
COCHINEAL, Honduras Black ..	.. lb.	3 2 0	4 10 0		
Silver ..	..	2 10 0	2 6 0		
Mexican Black ..	..	2 2 0	3 9 0		
Silver ..	..	2 2 0	3 0 0		
COBALT ..	.. lb.	0 0 0	0 0 0		
COGULUS INDICUS ..	..cwt.	1 1 0	1 4 0		

DRUGS, &c., continued.

		Price.			
		£. s. d.	£. s. d.		
COFFEE, Jamaica, triage and ord.	..	1 13 0	1 17 0		{ B.P. 4d, F. 6d. per lb.
good and fine ord.	..	1 18 0	2 6 0		
low to good middling	..	2 8 0	3 10 0		
fine middling & fine	..	3 12 0	4 10 0		
Demerara, triage & ord.	..	0 0 0	0 0 0		
good and fine ord.	..	0 0 0	0 0 0		
low to good mid.	..	0 0 0	0 0 0		
Berlice, triage and ord.	..	0 0 0	0 0 0		
good and fine ord.	..	0 0 0	0 0 0		
low to fine middling	..	0 0 0	0 0 0		
Dominica and St. Lucia, triage and ordinary	..	0 0 0	0 0 0		
good and fine ord.	..	0 0 0	0 0 0		
low to good middling	..	0 0 0	0 0 0		
Ceylon, ordinary to very good ord. native	..	1 19 0	2 0 0		
fine ord. to mid. plu.	..	2 4 0	2 14 0		
good mid. to fine do.	..	2 16 0	3 15 0		
Mocha, ord. & ungarbled	..	2 0 0	2 10 0		
clean garbled ..	..	2 8 0	3 15 0		
fine ..	..	4 0 0	4 15 0		
Sumatra, Padang, &c. ..	..	1 15 0	2 0 0		
Java ..	..	2 2 0	2 10 0		
Mysoore with certificate	..	1 18 0	2 10 0		
Brasil, ord. to fine ord.	..	1 16 0	1 18 0		
ex. fine plant. kind	..	2 0 0	2 15 0		
St. Domingo ..	..	1 18 0	1 19 0		
Havannah, ord. to g. ord.	..	1 18 0	2 0 0		
fine ordin. to mid.	..	2 2 0	2 10 0		
Cuba, ord. to good ord.	..	1 18 0	2 2 0		
fine ord. to middling	..	2 4 0	2 15 0		
Porto Rico ..	..	1 18 0	2 18 0		
La Guayra ..	..	1 18 0	2 12 0		
Costa Rica ..	..	2 0 0	3 5 0		
COCOA, Trinidad, red ..	..	2 0 0	2 8 0		
grey ..	..	1 14 0	2 0 0		{ B.P. 1d. F. 2 per lb.
Grenada ..	..	1 14 0	2 2 0		
Para, St. Domingo, and Bahia	..	1 7 0	1 9 0		
Guayaquil ..	..	1 11 6	1 13 0		
COLOCYNTH, Turkey ..	.. lb.	0 6 0	1 9 0		
Spanish ..	..	0 11 0	1 6 0		
COLOMBO ROOT ..	..	1 5 0	3 10 0		
COFFEERAS, Green, bc. ..	.. ton	1 10 0	2 15 0		
Blue ..	..	8 0 0	1 10 0		
CREAM TARTAR, French ..	..	2 18 0	3 8 0		
Venetian ..	..	3 5 0	3 8 0		
CUBERS ..	..cwt.	4 15 0	5 0 0		
CUTCH ..	..	16 6 0	17 0 0		
DRAGON'S BLOOD ..	.. lump	3 10 0	9 15 0		
Reed ..	..	8 0 0	14 10 0		
DYEWOODS:					
Brasil ..	.. ton	45 0 0	80 0 0		
Barwood, Angola ..	..	0 0 0	0 0 0		
Camwood ..	..	13 15 0	28 15 0		
Fustic, Brasil ..	..	0 0 0	0 0 0		
Cuba ..	..	8 10 0	9 0 0		
Jamaica ..	..	4 0 0	5 0 0		
Spanish ..	..	4 0 0	4 10 0		
Zante ..	..	0 0 0	0 0 0		
Logwood, Campeachy ..	..	6 10 0	6 15 0		
Honduras ..	..	5 0 0	5 10 0		
Jamaica ..	..	3 10 0	4 0 0		
St. Domingo ..	..	4 0 0	5 0 0		
Nicaragua, Lima ..	..	14 0 0	15 0 0		
solid ..	..	12 0 0	17 0 0		
small and mid.	..	6 10 0	12 0 0		
Red Sanders ..	.. ton	4 15 0	5 15 0		
* ESSENTIAL OILS ..					s. per lb.
Cloves, bd. ..	.. lb.	2 8 0	5 4 0		
Caraway ..	..	6 2 0	5 4 0		
Lavender ..	..	2 6 0	7 0 0		
Peppermint, bd. ..	..	4 0 0	11 0 0		
Spike ..	..	4 0 0	0 0 0		
Aniseed, bd. ..	.. lb.	5 8 0	5 9 0		
Cassia, bd. ..	.. oz.	10 3 0	0 0 0		
Cayaput, bd. ..	..	0 2 0	0 4 0		
Cinnamon, bd. ..	..	0 8 0	2 6 0		
Mace (expd.), bd. ..	..	0 2 0	0 4 0		
Nutmegs, bd. ..	..	0 4 0	0 5 0		1s. per lb.
Bergamot ..	.. lb.	8 9 0	9 9 0		
Lemon ..	..	7 6 0	8 3 0		
Orange ..	..	6 9 0	7 0 0		
Rosemary ..	..	1 8 0	2 6 0		
Thyme ..	..	2 9 0	3 0 0		
Otto Roses ..	.. oz.	13 6 0	1 0 0		
Almonds ..	.. lb.	1 5 0	0 0 0		
GALANGAL ROOT, bd. ..	..cwt.	14 0 0	1 4 0		
GALLS, sorts ..	..cwt.	3 0 0	3 15 0		
Green or White ..	..	2 10 0	3 12 0		
Blue ..	..	4 12 0	4 15 0		
E. I. Blue ..	.. bd.	3 10 0	5 0 0		
GERMIAN ROOT ..	..cwt.	1 1 0	1 2 0		
GLUC, Best Town ..	..cwt.	1 5 0	1 0 0		

DRUGS, &c., continued.		Price.			DRUGS, &c., continued.		Price.		
		£. s. d.	£. s. d.				£. s. d.	£. s. d.	
GLUE, Interior	..	0 0 @	0 0 0	5s. per cwt.	METALS:				
Foreign	..	1 10 0 @	2 5 0		Copper Brt. Cakes ..	.. ton	88 10 0 @	0 0 0	per cwt. un-
GUINEA GRAINS, bd. ..	.. lb.	0 2 0 @	2 4 0		Tile	.. lb.	87 10 0 @	0 0 0	wrought 4s.
GUTTA PERCHA	.. lb.	0 7 @	0 10 @		Sheets	.. lb.	0 10 @	0 0 0	B.F. 8s. 9d. F.
GUMS:					Bottoms	.. lb.	0 11 @	0 0 0	wrought B.F.
Ammoniac, Lp. .. .	.. cwt.	9 6 @	1 10 0		Old	.. ton	86 0 0 @	0 0 0	5s. F. 10s. old
Drop	..	1 15 0 @	3 15 0		S. American ..	.. ton	0 0 @	0 0 0	B.F. 3s. 6d.
Arabic, E. I. .. .	..	1 0 0 @	4 12 0		Foreign Cake ..	..	0 0 @	0 0 0	old F. 7s. 6d.
Cape	..	13 0 @	1 2 0		Foreign Tile ..	..	0 0 @	0 0 0	
Turkey, fine .. .	..	8 10 0 @	10 0 0		IRON, British Bars ..	..	5 2 6 @	5 10 0	
2nds and 3rds .. .	..	2 10 0 @	6 0 0		Rods	..	6 5 0 @	6 15 0	
Australian	..	1 17 0 @	3 0 0		Hoops	..	7 0 0 @	7 10 0	
Barbary, Brown ..	..	1 15 0 @	2 10 0		Sheet	..	7 15 0 @	8 5 0	
White	..	3 5 0 @	3 15 0		Cargo in Wales Bars	..	4 7 6 @	4 12 6	
Gedda	..	5 0 0 @	6 0 0		Pigs No. 1 Wales ..	..	3 0 0 @	4 0 0	
ANIMI, washed .. .	..	5 0 0 @	19 0 0		No. 1 Clyde .. .	..	1 18 0 @	1 19 0	
scrapped	..	6 0 0 @	19 12 6		Russian .. .C.C.N.D.	..	0 0 @	0 0 0	
Copal lb.	..	0 6 @	2 8 0		P.S.I.	..	0 0 @	0 0 0	
ASAFOETIDA .. .	.. cwt.	10 0 @	4 10 0		Archangel .. .	..	0 0 @	0 0 0	
BENJAMIN, 3rds ..	..	3 5 0 @	9 10 0		Swedish .. .	..	11 10 0 @	12 10 0	
1st and 2nds .. .	..	10 0 0 @	28 0 0		LEAD, British:				
DAMMAR	..	1 10 0 @	3 4 0		Pigs	.. ton	16 10 0 @	0 0 0	
GAMBOGE	..	5 0 0 @	11 12 6		Sheet milled ..	..	18 0 0 @	18 5 0	
GALBANUM	..	2 10 0 @	3 0 0		Shot Pat. .. .	..	19 10 0 @	20 10 0	
GUAIACUM lb.	..	0 6 @	1 0 0		Red or Minium ..	..	18 10 0 @	19 0 0	
MYRRH, E. I. .. .	.. cwt.	2 0 0 @	10 0 0		White	..	23 0 0 @	25 0 0	
MASTIC lb.	..	3 0 @	6 6 0		Litharge	..	19 0 0 @	0 0 0	
OLIBANUM	.. cwt.	8 0 @	2 15 0		Pig Spanish .. .	..	0 0 @	0 0 0	
SANDRACH	..	2 6 0 @	3 10 0		American	..	0 0 @	0 0 0	
SENEGAL, garbled ..	..	3 0 0 @	3 15 0		STEEL, English ..	..	0 0 @	0 0 0	
TRAGACANTH, Picked	..	13 0 0 @	17 0 0		Swedish Keg ..	..	15 0 0 @	15 10 0	
Sorts	..	8 10 0 @	10 0 0		Faggot	..	15 10 0 @	16 0 0	
LAC, Sticklac, Bengal	..	17 0 @	1 15 0		TIN, Blocks	..	4 4 0 @	0 0 0	
Slam, &c. .. .	..	2 10 0 @	3 8 0		Ingots	..	4 10 0 @	0 0 0	
Shellac, Liver .. .	.. cwt.	2 2 0 @	2 5 0		In Bars	..	4 5 0 @	0 0 0	
Euby	..	2 5 0 @	3 10 0		Banca bd.	..	0 0 @	4 0 0	
Orange	..	2 5 0 @	3 14 0		Straits bd.	..	3 18 0 @	3 19 0	6 0
Block	..	1 1 0 @	2 8 0		Peruvian bd.	..	0 0 @	0 0 0	0 0B.
Blood	..	1 16 0 @	2 8 0		Plates, p. bx. of 225 Sheets	..	1 3 6 @	0 0 0	
Seedlac	.. cwt.	1 0 0 @	2 0 0		No. 1 C 13 1/2 by 10 in.	..	1 11 6 @	0 0 0	
HELLBONE ROOT ..	.. cwt.	1 18 0 @	0 0 0		1 X	..	0 0 @	0 0 0	
HONEY, Fine	..	1 5 0 @	2 10 0	B.P. 5 F. 10s.	1 XX	..	0 0 @	0 0 0	
ICELAND MOSS .. .	.. lb.	0 2 1/2 @	0 2 0		SPELTER on the spot	.. ton	13 15 0 @	14 0 0	
INDIA RUBBER, solid	..	0 8 @	0 9 0		Delivery	..	14 0 0 @	0 0 0	
bottles	..	1 0 @	1 8 0		ZINC, English Sheet	..	21 0 0 @	0 0 0	10 per cwt.
small	..	1 9 @	2 6 0		PLATINA ORE ..	.. oz.	0 0 @	0 0 0	
INDIGO	.. lb.	4 2 @	4 7 0		ORSEW lb.	..	0 0 @	0 0 0	
Bengal, fine blue ..	..	6 0 @	6 4 0		MUSK, good and fine	.. oz.	10 0 @	1 5 0	5 0 p. cwt.
good and fine violet and purple	..	5 6 @	5 9 0		NUX VOMICA, bd. ..	.. cwt.	7 0 @	9 6 0	
ordinary and middling ..	..	4 7 @	5 0 0		OILS—Imperial measure:				
good and fine copper ..	..	5 4 @	5 8 0		Olive, Florence, 4 chest ..	..	15 0 @	18 0 0	
ordinary and middling ..	..	3 9 @	5 0 0		Lucca, Jars .. .	..	5 0 0 @	41 0 0	
Consumers, good and fine	..	4 8 @	5 2 0		Gallipoli, 228 gals ..	..	40 0 0 @	39 10 0	
ordinary and middling ..	..	3 9 @	4 6 0		Spanish, ditto ..	..	38 0 0 @	39 10 0	
Java, good and fine ..	..	4 3 @	6 8 0		Linseed cwt.	..	1 8 0 @	1 8 6 0	
Oude, good and fine ..	..	3 3 @	4 6 0		Rape, Pale	..	1 12 0 @	1 14 0	
ordinary and middling ..	..	2 2 @	3 2 0		Brown	..	1 12 6 @	1 12 0	
Madras, good and fine ..	..	3 1 @	4 3 0		Cod	.. tun.	36 10 0 @	0 0 0	
ordinary and middling ..	..	1 9 @	3 0 0		Seal, Pale	..	34 10 0 @	0 0 0	
Kurpah, good and fine ..	..	3 6 @	5 6 0		Brown, yel., and straw	..	31 0 0 @	34 0 0	
ordinary and middling ..	..	2 0 @	3 5 0		Sperm	..	84 0 0 @	85 0 0	
Manilla good and fine	..	Withdrawn.			Head Matter .. .	..	90 0 0 @	96 0 0	
ordinary and middling ..	..				Whale, Greenland ..	..	0 0 @	0 0 0	
IPERACUANHA .. .	.. lb.	4 3 @	5 0 0		South Sea .. .	..	31 0 0 @	33 0 0	
ISINGLASS LEAF, 1st sort ..	..	10 0 @	13 6 0		Cocoa Nut .. .	.. cwt.	1 10 0 @	1 15 2 0	
2nd sort	..	9 0 @	10 0 0		Palm	.. cwt.	27 0 0 @	27 10 0	
Simovia	..	2 0 @	2 9 0		OLIVES, French 4 bars ..	.. 2 gals	3 0 0 @	4 0 0	0 2 0 gall.
Siberia Purse	..	5 0 @	6 0 0		Spanish, keg 2 galls ..	..	9 0 @	10 0 0	
Short Staple, 1st .. .	..	8 0 @	14 0 0		OPIMUM, Turkey, bd ..	.. lb.	9 6 @	14 0 0	0 1 0 p. lb.
Long ditto	..	10 0 @	14 0 0		Egyptian	..	7 6 @	8 6 0	
ISINGLASS, Brazil ..	..	0 6 @	5 6 0		ORCHELLA, Angola ..	.. ton	35 0 0 @	6 0 0	
JALAP	.. lb.	2 0 @	2 6 0		Cape de Verl .. .	..	25 0 0 @	25 0 0	
JUICE OF LEMON .. .	.. gal.	0 10 @	1 0 0		Madeira	..	30 0 0 @	0 0 0	
LAC DYE, Fine .. .	.. lb.	1 6 @	2 0 0		ORPIMENT, E. India ..	..	0 0 @	0 0 0	
Good	..	1 0 @	1 4 0		ORANGE FLOWER water	.. lb.	0 8 @	0 0 0	
Middling	..	0 10 @	1 0 0		Peel	..	5 0 @	0 0 0	
Ordinary	..	0 3 @	0 8 0		ORRIS ROOT	.. cwt.	1 18 0 @	2 2 0	
Lake	..	0 3 @	0 8 0		PELLITORY ROOT ..	.. lb.	0 6 @	0 0 0	
LIQUORICE Paste, Ital. ..	.. cwt.	3 5 0 @	3 12 6	F 1 0 0 cwt.	PINK ROOT	.. lb.	0 5 @	0 8 0	
Block	..	4 0 9 @	5 15 0	BP 10 0 cwt.	PITCH, British ..	.. cwt.	5 6 @	0 0 0	
MADDERS, Dutch Crop ..	.. cwt.	2 6 0 @	2 10 0		Archangel	..	7 6 @	0 0 0	
Ombro	..	2 2 0 @	2 5 0		Stockholm .. .	.. cwt.	12 0 0 @	0 0 0	
Gamene	..	1 5 0 @	1 10 0		Burgundy	.. cwt.	0 0 @	0 0 0	
Mull	..	8 0 @	12 6 0		PUMICESTONE, sorts	.. ton	5 0 0 @	8 0 0	
French	..	0 0 @	0 0 0		QUASSIA	.. cwt.	6 0 @	8 0 0	
Spanish	..	1 10 0 @	2 0 0		QUICKSILVER .. .	.. lb.	3 4 @	0 0 0	
MADDER ROOTS, Turkey	..	1 6 0 @	1 10 0		RHATANIA ROOT ..	.. lb.	0 5 @	0 8 0	
MAGNESIA, English ..	..	2 0 0 @	2 2 0		RHUBARB, round ..	..	0 3 @	2 6 0	
MANNA, Flakey .. .	.. lb.	3 0 @	3 6 0		Flat	..	0 3 @	2 6 0	
Sicily	..	1 0 @	1 6 0		Dutch, trimd. ..	..	2 6 @	3 2 0	
MUNJEET, E. I. .. .	.. cwt.	18 0 @	1 2 0		Russian	..	10 0 @	12 0 0	

Public Sale Prices.

DRUGS, &c., continued.		Price.	
		£. s. d.	£. s. d.
SACCHARUM SATURNI, bd...	lb.	1 0 0	0 0 0
SAFFRON, Spanish ..	lb.	10 0 0	1 5 0
*SAGO common ..	..cwt.	10 0 0	10 0 0
Pearl ..	..	15 6 0	1 5 0
Sago Flour ..	..	14 0 0	0 0 0
SAL AMMONIAC, E. I. ..	..cwt.	1 19 0	1 18 0
English, Refined ..	..	1 18 0	0 0 0
SALTS, Glauber ..	..	6 6 0	7 0 0
Epsom ..	..	6 0 0	6 0 0
SALT ..	..	8 15 0	14 5 0
SARSAPARILLA, Brazil ..	lb.	0 10 0	1 3 0
Honduras ..	..	0 10 0	1 6 0
Vera Cruz ..	..	0 4 0	0 5 0
Jamaica ..	..	1 6 0	3 1 0
SASSAPARILLA ROOT ..	..ton	10 0 0	0 19 0
SAFFLOWER, E. I. ..	..cwt.	8 10 0	7 10 0
Bombay ..	..	15 0 0	2 0 0
SHUMAC, Malaga ..	..cwt.	12 0 0	12 6 0
Sicily ..	..	14 6 0	15 0 0
Trieste ..	..	4 6 0	6 6 0
SANTAL, Rough ..	..	1 4 6	1 8 6
British, Refined ..	..	1 9 6	1 10 0
Nitrate of Soda ..	..	14 9 0	15 0 0
British, Refined ..	..	0 0 0	0 0 0
SCAMMONT, Smyrna ..	lb.	5 0 0	7 0 0
Aleppo, Snds ..	..	10 0 0	15 0 0
fine ..	..	1 8 0	1 15 0
SEEDS, Aniseed ..	..cwt.	2 2 0	2 5 0
German ..	..	2 2 0	2 5 6
E. I. Star ..	..	3 14 0	3 16 0
Cumin ..	..	2 15 0	3 10 0
Curraway, Foreign ..	..	19 0 0	1 10 0
SENEGA ROOT ..	lb.	0 6 0	1 0 0
SENEGA, Alexandria ..	lb.	0 2 0	0 6 0
Smyrna ..	..	0 0 0	0 0 0
East India ..	..	0 0 0	0 3 0
Tinnevely ..	..	0 7 0	0 10 0
SMELTS, Saxon, FFFE ..	lb.	1 2 0	0 0 0
FFFE ..	..	1 7 0	0 0 0
Danish, FFFE ..	..	1 2 0	0 0 0
FFFE ..	..	1 8 0	0 0 0
SNAKE ROOT ..	lb.	0 4 0	0 8 0
SOAP, Naples, soft ..	..	1 6 0	1 9 0
Castile, hard ..	..cwt.	3 0 0	0 0 0
British, Mottled ..	..	2 2 0	2 4 0
Yellow ..	..	1 18 0	2 2 0
White ..	..	2 14 0	0 0 0
Scented ..	..	0 0 0	0 0 0
Windsor ..	..	0 0 0	0 0 0
Oil ..	..	0 0 0	0 0 0
Soft B. B. ..	..	1 0 0	0 0 0
B. S. ..	..	0 0 0	0 0 0
B. ..	..	0 0 0	0 0 0
SODA ..	..ton.	5 17 0	0 0 0
ASHES, Canada ..	Pot 1st. cwt.	1 10 0	1 11 0
Pearl lat ..	..	1 8 0	0 0 0
United States Pot ..	..	0 0 0	0 0 0
Pearl ..	..	0 0 0	0 0 0
Soy, bd. ..	gallon	4 0 0	0 0 0
STICES—			
Cassia Lignea, ord. to mid.	..	5 0 0	5 5 0
good to fine ..	..	5 6 0	5 10 0
Cassia Buds ..	..	6 5 0	0 0 0
Cinnamon, Ceylon, 1st quality ..	..	1 6 0	3 2 0
2d ..	..	1 1 0	2 2 0
3d ..	..	0 10 0	1 7 0
Malabar ..	..	0 0 0	0 0 0
Tellicherry ..	..	0 8 0	1 10 0
Groves, Amboyne ..	..	0 7 0	0 9 0
Bourbon & Zanzibar ..	..	0 6 0	0 6 0
Penang ..	..	0 10 0	1 2 0
Ginger, Bengal ..	..	15 0 0	2 10 0
Malabar ..	..	16 0 0	3 8 0
Jamaica ..	..	1 18 0	11 10 0
Barbadoes ..	..	0 0 0	0 0 0
Mace ..	..	1 10 0	2 7 0
Nutmegs, browh ..	..	1 10 0	3 9 0
lined ..	..	1 4 0	3 0 0
Pepper, bd. Malabar, heavy shot ..	..	0 3 0	0 3 0
light and half heavy ..	..	0 3 0	0 3 0
Eastern ..	..	0 3 0	0 3 0
white ..	..	0 6 0	0 10 0
long ..	..	0 0 0	0 0 0
Pimento ..	..	0 5 0	0 5 0
SPONGE, fine ..	lb.	9 0 0	1 5 0
ordinary ..	..	1 0 0	7 6 0
SPIRITS OF TURPENTINE ..	..cwt.	1 13 0	1 14 0
SULPHATE OF QUININE ..	..oz.	11 9 0	12 0 0
SQUILLS, dry ..	..lb.	0 1 0	0 2 0
undried ..	..	0 0 0	0 0 0
SPERMACEIN, English ..	..lb.	1 4 0	1 5 0
American ..	..	0 6 0	0 0 0
STARON, English ..	..	2 6 0	2 12 0
Irish ..	..	0 0 0	0 0 0
POTATO FLOUR ..	..	14 6 0	15 6 0
TALLOW:			
Petersburg, new ..	..cwt.	1 17 0	1 17 6

DRUGS, &c., continued.		Price.	
		£. s. d.	£. s. d.
TALLOW:			
old ..	..	1 16 6	1 16 9
Delivery last three months ..	..	1 16 9	0 0 0
South American ..	..	1 15 0	1 17 0
Odessa Sheep ..	..	0 0 0	0 0 0
North American ..	..	0 0 0	0 0 0
Australian ..	..	1 15 0	1 17 0
Town Tallow ..	..cwt.	1 18 6	0 0 0
Fat by ditto ..	..	1 18 6	0 0 0
Russian Candle ..	..	1 19 8	0 0 0
Melted Stuff ..	..	1 19 8	0 0 0
Rough ditto ..	..	18 0 0	0 0 0
Graves ..	..	9 0 0	0 0 0
Good Dregs ..	..	6 0 0	6 0 0
PRICES OF CANDLES, per doz. t ..	..	6 0 0	7 0 0
Mould Candles ..	..	4 6 0	5 6 0
Store ditto ..	..	1 5 0	2 0 0
TAMARINDS, West Ind. ..	..cwt.	12 0 0	18 0 0
East Ind., bd. ..	..lb.	0 1 0	0 5 0
*TAPIOCA ..	..	0 1 0	0 5 0
TEA: bd.			
Bohea, Canton, & Woping ..	..	0 6 0	0 7 0
Fokien ..	..	0 0 0	0 0 0
Congou, ordinary and out ..	..	0 8 0	0 8 0
of condition ..	..	0 8 0	0 9 0
good ordinary ..	..	0 9 0	0 10 0
mixed blackish leaf ..	..	0 10 0	0 11 0
rather blackish leaf ..	..	0 11 0	1 0 0
blackish leaf ..	..	1 0 0	1 1 0
ditto rather strong to ..	..	1 0 0	1 1 0
strong ..	..	1 1 0	1 1 0
Pekoe kind and flavour ..	..	0 11 0	1 0 0
Ning Yung, fair to fine ..	..	0 9 0	1 0 0
Pouchong ..	..	0 0 0	0 0 0
Caper, chests ..	..	0 11 0	1 6 0
do. in 10 lb. Catty boxes ..	..	0 0 0	0 0 0
Campol, common ..	..	0 0 0	0 0 0
good to fine ..	..	0 0 0	0 0 0
Souchong, ordinary to good ..	..	0 0 0	1 2 0
fine ..	..	1 4 0	2 0 0
Flowery Pekoe, flat ..	..	1 6 0	2 3 0
fair to fine ..	..	2 4 0	3 0 0
very fine and flowery ..	..	0 10 0	1 4 0
Black leaf Pekoe or Hong ..	..	0 11 0	0 11 0
Musy ..	..	1 0 0	1 1 0
Orange Pekoe, faint & odd ..	..	1 1 0	1 1 0
common to fine plain ..	..	1 1 0	1 9 0
common to fine scented ..	..	0 10 0	0 11 0
Twankay, common ..	..	1 0 0	1 1 0
good ..	..	1 0 0	1 1 0
fine to Hyson kind ..	..	1 2 0	1 3 0
Hyson Skin, common ..	..	0 10 0	0 11 0
good to fine ..	..	1 0 0	1 2 0
Hyson, common ..	..	1 2 0	1 3 0
fair to good ..	..	1 4 0	1 10 0
fine ..	..	2 0 0	2 6 0
extra fine ..	..	2 10 0	3 10 0
Young Hyson, common ..	..	0 8 0	1 1 0
good to fine ..	..	1 2 0	2 7 0
Imperial, common ..	..	1 2 0	1 4 0
good to fine ..	..	1 5 0	2 6 0
Gunpowder, common ..	..	0 8 0	1 7 0
good to fine ..	..	1 9 0	4 0 0
TURMERIC, Bengal ..	..cwt.	12 0 0	15 0 0
Java ..	..	10 0 0	13 0 0
Madras ..	..	10 0 0	14 0 0
TERRA JAPONICA ..	..cwt.	17 6 0	18 6 0
Sienna ..	..	1 2 0	1 4 0
VALONIA, Smyrna ..	..ton	15 0 0	17 0 0
Picked Morea ..	..	13 0 0	14 0 0
VANILLAS, Brazil ..	..lb.	10 0 0	2 12 6
Vera Cruz ..	..	1 8 0	1 10 0
VERDIGRIS, Foreign ..	..	0 9 0	0 10 0
English ..	..	1 3 0	0 0 0
VERMILION, China ..	..lb.	3 0 0	4 3 0
English ..	..	5 0 0	0 0 0
VITRIOL, blue ..	..	1 8 0	1 10 0
Foreign, white ..	..	14 0 0	0 0 0
English, ditto ..	..	1 4 0	1 5 0
Oil of ..	..	0 1 0	0 9 0
WAX, Mogadore ..	..cwt.	6 0 0	6 15 9
American ..	..	5 15 0	6 0 0
Russian ..	..	7 10 0	0 0 0
Hambro' ..	..	7 12 0	8 0 0
East India ..	..	6 0 0	9 2 6
African ..	..	5 10 0	7 0 0
White Hambro' ..	..	7 0 0	8 10 0
English ..	..cwt.	2 0 0	9 15 0
Cape ..	..	5 15 0	6 15 0
West India ..	..	0 0 0	7 0 0
WELD ..	..lead	0 0 0	0 0 0
WOOD ..	..ton	0 0 0	0 0 0
WOOD, Sapan Bimas ..	..	9 10 0	11 10 0

B. P. 1d.
Foreign
1s. 6d. per
cwt.

B. P. 1d.
F. 3d.
6d. per cwt.

1s. 1d. per lb.

5s. per cwt.

5s. per cwt.

1s. B. P. 2s. 6d.
F. per cwt.

PUBLIC SALES OF DRUGS.

November 13.—By ELLIS AND HALE.—18 chs. Gum Myrrh, 90s. to £8. 10s., part sold; 25 bls. Lima Sarsaparilla, out; 86 chs. Rhubarb, 1s. 2d. to 1s. 8d., part sold; 4 chs. Gum Benjamin, £6. 15s. to £7; 6 chs. Assafetida, 28s., bought in; 15 chs. Gum Arabic, 26s., bought in; 10 cks. Gum Sandrac, 52s., bought in; 10 pkgs. Cantharides, 2s. 10d. to 3s. 3d.; 24 bls. Chilies, out; 8 chs. Aloes, out; 1 cs. Oil Roses, out; 6 serons Caraway Seed, 21s. 6d., sold; 20 brls. Gum Thus, 10s., bought in; 32 bxs. White Wax, £9 to £9. 2s. 6d., sold; 6 pps. Poppy Oil, 34s., bought in; 7 triss. Vanilla, 20s. to 22s., bought in; 2 cs. Croton Oil, 4d., bought in; 54 chs. Shellac, 47s. 6d. to 48s., sold; 60 bgs. Coculus Indicus, 21s. to 22s., sold; 4 cs. Pellitory Root, 28s., sold; 348 bgs. Galangal Root, out; 7 pkgs. Camomile Flowers, 50s.; 57 brls. Gum Thus, out.

By C. L. JENKIN.—254 serons Red Bark, 1s. 1d. to 4s., part sold; 30 chs. Crown and Grey Bark, 1s. 1d. to 2s. 3d., bought in; 2 bls. Jalap, 2s. 9d., bought in; 5 bls. Alkanet Root, 35s., bought in; 20 tins Balsam Tolu, 3s. 6d., bought in; 20 kgs. Canada Balsam, 10d., bought in; 89 bgs. Cummin Seeds, 25s., bought in, 33s., 34s. 6d., sold; 4 chs. Gum Tragacanth, £6, sold; 10 cs. Liquorice Juice, 35s. to 38s., sold.

By D. GRAY.—182 cs. Castor Oil, 2½d. to 3½d.; 10 ditto Dragons' Blood, £7. 10s. to £8. 2s. 6d., sold; 5 bls. Tinnevely Senna, 8½d., sold; 104 bgs. Cardamom Seeds, 6d., bought in; 4 bxs. Gum Benjamin, £6. 5s. to £27; 5 cks. Cream Tartar, out; 10 kgs. Honey, 45s. to 50s., bought in; 12 bgs. Gum Senegal, 66s., bought in; 3 cs. Oil Peppermint, 10s., bought in; 5 ditto Cape Aloes, 32s. to 36s., bought in; 4 cks. Gum Sandrac, 42s., bought in; 6 ditto Sugar Lead, 35s., bought in.

By GEORGE BROOKS AND J. CLAXTON.—49 pkgs. Scammony, 4s. to 35s., bought in; 5 cs. Turkey Opium, 6s. 3d., bought in; 14 cks. Cantharides, 2s. 8d. to 2s. 9d., sold; 4 brls. Gum Mastic, 4s. 5d. to 6s.; 19 cs. Egyptian Opium, 6s. 5d. to 9s., part sold; 29 cks. Bitter Almonds, 33s. 6d. to 35s. 6d., sold; 6 cs. Picked Arabic, £7. to £7. 5s.; 2 pkgs. Beeswax, £7. 5s., sold; 116 cks. Turkey Arabic, 48s. to 52s., sold; 1 cs. Oil Geranium, 1s. 5d., bought in; 172 sks. Turkey Galls, straw, 65s. to 72s. 6d., white, 100s. to 102s. 6d.; 9 cs. Colocynth, 8d. to 1s. 9d.

By J. AND S. W. GRIFFIN.—12 cs. White Wax, £7. 15s. to £8. 5s.; 81 chs. Gum Olibanum, 10s. to £2. 6s., bought in; 24 bxs. Vermillion, 3s., bought in; 18 bgs. Linseed, 47s. 6d., sold; 20 kgs. Narbonne Honey, 6½d. to 7d., sold; 18 bls. Camomile Flowers, 45s. to 46s., sold; 8 bgs. Calamus Aromaticus, 20s. to 24s., out; 12 bls. Gentian Root, 17s.

By PRICE, GIFFORD AND CO.—167 cs. Castor Oil, straw to fine pale, 2½d. to 4½d.; 205 bgs. Madras Turmeric, 11s. to 14s., sold; 2 bgs. Beeswax, 6s. to 7s. 6d., sold; 225 lbs. Hyd. Potash, 6d., bought in; 12 cs. Flaky Manna, 2s. 5d. to 2s. 6d., sold; 60 cs. Shellac, 35s. 6d. to 39s., bought in; 1 ck. Cocoa Nut Oil, 31s., sold; 430 oz. Otto Roses, 17s., bought in; 1 tin Vanilla, out.

By LEWIS AND PRAT.—83 cs. Castor Oil, straw to pale, 2½d. to 3½d.; 46 bgs. E. I. Gum Arabic, 13s. to 14s., sold; 18 ditto Gum Kino, 27s. to 28s. 6d., sold; 8 bls. Gum Copal, 60s. to 61s., sold; 16 cs. Sierra Leone Gum Copal, 4d. to 1s. 2½d.; 2 cks. Mogadore Gum Arabic, 51s.; 1 ck. Gum Sandrac, 62s.; 45 bgs. Cardamoms, 1s. 8d. to 2s. 11d., bought in; 9 ditto Beeswax, £6. 10s.; 13 bxs. Vermilion, 4s., bought in; 47 bls. E. I. Rhubarb, 6½d. to 1s. 4d., bought in; 2 chts. Dutch trimmed Rhubarb, 1s. 4d.; 47 bls. E. I. Senna, 1½d., sold; 2 bgs. Nux Vomica, 6s.; 10 serons Bark, out; 1 cs. Oil Cassia, 10s. 8d., sold; 1 ditto Oil Anniseed, 5s. 8d., sold; 2 ditto Lemon Grass Oil, 4½d., sold; 18 ditto Citronelle Oil, 4½d., sold; 21 ditto Cinnamon Oil, 8½d. to 1s. 10d.; 10 bts. Croton Oil, 5d.; 15 cks. and 50 bgs. Guinea Grains, 40s. to 43s., bought in; 21 bgs. Worm Seed, 16s. to 17s.; 1 bl. Bucha Leaves, 1d., bought in; 1 pkg. Tamarinds, out; 1 ck. Ergot of Rye, out; 5 cs. Cape Aloes,

27s. 6d., sold; 648 bgs. Cutch, 16s. 6d. to 17s., small part sold; 211 ditto Myrabolanes, 3s. 6d. to 8s.; 35 chts. Gum Olibanum, 7s. to 39s., sold; 3 bkts. E. I. Isinglass, 1s. 10d., sold; 10 chts. Gum Animi, £5 to £7. 10s., sold; 64 bxs. Gum Damer, 39s. 6d. to 41s., bought in; 8 cs. E. I. Isinglass, 2s.; 20 hds. Camphor, 65s., bought in; 13 pkgs. Sarsaparilla, 7½d. to 1s. 6d., sold; 1 kg. Castorum, 44s.

By THOMAS MERRY AND SON.—10 cads. Tonquin Musk, picked, 18s. to 24s. 9d., sold; 187 serons Bark, part Quill, yellow, out; 8 pkgs. Extract Bolivian Bark, out; 8 sks. Blue Galls, 97s. 6d.; 8 serons Ipecacuanha, 5s. to 5s. 1d., out; 5 cks. Cream Tartar, 61s. to 61s. 6d., out; 28 cks. Brown Tartar, part sea-damaged, 42s. 6d. to 47s. 6d., bought in; 12 tins Hyraceum, 5s., out; 3 cks. Naptha, 5s. to 5s. 3d.; 4 drums Scammony, 20s. to 24s. 6d.; 141 cakes E. I. Beeswax, £6. 2s. 6d. to £6. 12s. 6d.; 23 cs. Gum Benjamin, £6. 10s. to £6. 15s., sold; 20 cs. New Manna, 1s. 4d. to 2s. 7d.; 1 cs. Otto Roses, out; 5 cs. Salep, £5, out; 4 cs. Oil Thyme, dry pod, 2s. 6d., out; 3 cs. Oil Rosemary, 2s. 4d.; 5 jars Essence Bergamot, 8s. 3d. to 8s. 6d.; 6 bls. Ergot Rye, 1s. 2d.; 4 cs. Croton Oil, 4d., out; 14 pkgs. Brazil Isinglass, 10d. to 4s. 3d., sold; 22 serons Cascarella Bark, 19s. to 35s. 6d., bought in; 84 chts. Shellac, 33s. to 39s., sold; 10 cs. Australian Gum, out.

IMPORTS OF DRUGS, &c., INTO LONDON DURING THE WEEK ENDING WEDNESDAY, NOV. 19.

FRIDAY, NOV. 14.—In the Earl of Auckland, from Rotterdam.

100 bls. mustard seed.

In the Hindoo, from Canton.

1 box seeds, 130 cases, 26 cks. preserved ginger.

SATURDAY, NOV. 15.—In the Magnet, from Amsterdam.

2 cks. cassia fistula, 35 cs. gum damar, 7 brls. gum copal.

In the Corymbus, from Uddewalla.

5 cks. honey.

MONDAY, NOV. 17.—In the Adonis, from Rotterdam.

14 casks madder.

In the William Joliffe, from Havre.

12 pkgs. extract of absinthie.

In the Chancellor, from Bombay.

92 cs. olibanum, 405 cs. gum arabic, 46 pkgs. gum animi, 26 bls. munjeet, 106 bgs. turmeric, 214 bls. madder roots, 58 bgs. senna.

In the Peru, from Calcutta.

75 bls. safflower, 546 cs. castor oil, 150 cs. tamarinds 1520 bgs. cutch, 2021 bgs. saltpetre.

In the Flora M'Donald, from Penang.

205 pkgs. gambier, 33 cs. gum, 883 bkts. cutch, 1 cak. oil nutmegs.

TO CORRESPONDENTS.

* * * Gentlemen who send manuscript to the CHEMICAL RECORD under arrangement for payment are informed that original matter alone will be allowed to count; no abstracts, translations, or adaptations being receivable under the terms proposed. The propriety of this will be obvious.

"Eblanensis" is desirous of knowing whether a gentleman who graduates at no university, but merely holds a licence to practise from the College of Physicians, can justly be called Doctor. We do not know what our correspondent means by justly; the title is borne and sanctioned by courtesy, as is the case with regard to Bachelors of Medicine, who are also called Doctor by courtesy.

Mr. Jacob Bell and Dr. Pereira will both see, on consideration, we are assured, that their communications are not couched in a style for publication; as regards the sentiments, they are not accordant with ours, it is true, but this would not have been held by us as a sufficient cause to refuse their announcement in our pages; our objection solely applies to the language. Dr. Pereira's request is not such as we can accede to. The CHEMICAL RECORD is published weekly, at its office, 17, Upper Wellington-street, Strand. It may be had through any bookseller or newsmen, and will be regularly furnished from the office to quarterly, half-yearly, and yearly subscribers. Price 6d., stamped 6d.; quarterly, 6s. 6d.; half-yearly, 12s.; yearly, 30s. Payment in advance. Post-office orders, or orders on a London house, should be drawn in favor of the Publisher, Mr. RICHARD RADCLIFFE FORD, 17, Upper Wellington-street, Strand.

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A Specific for the cure of those diseases to which it is more immediately applicable, viz., Urinary Discharges, Gleet, Fluor Albis, Calculus or Gravel. It speedily removes Spasmodic Stricture, allays the Sympathetic Irritation excited in the Urinary Passages during attacks of Gout, Rheumatism, as well as that produced by Ascariæ (worms) in the Rectum, Fles, &c., and corrects the Morbid States of the Urine. Its tonic, stimulant, and alterative properties render it particularly applicable in all cases of Relaxed Fibre and Nervous Debility attended with Irritation of the Kidneys, Bladder, Urethra, and Prostate Gland: operating through the agency of the nervous and circulatory systems, it improves the general health, and restores the organs and parts to their normal or healthy state of function. The most delicate persons may take it with perfect safety.

TESTIMONIALS.

From JOSEPH HENRY GREEN, F.R.S., President of the Royal College of Surgeons, London; Senior Surgeon to St. Thomas's Hospital; and Professor of Surgery in King's College, London.

I have made trial of Mr. Franks's Solution of Copaiba, at St. Thomas's Hospital, in a variety of cases of discharges in the male and female, and the results warrant my stating, that it is an efficacious remedy, and one which does not produce the usual unpleasant effects of Copaiba.

(Signed) JOSEPH HENRY GREEN.

Lincoln's-inn-fields, 15th April, 1856.

From BRANSBY COOPER, Esq., F.R.S., one of the Council of the Royal College of Surgeons, London; Surgeon to Guy's Hospital, and Lecturer on Anatomy, &c.

Mr. Bransby Cooper presents his compliments to Mr. George Franks, and has great pleasure in bearing testimony to the efficacy of his Solution of Copaiba in Gonorrhœa, for which disease Mr. Cooper has prescribed the solution in ten or twelve cases with perfect success.

New-street, April 13th, 1855.

From H. A. CÆSAR, M.D., Surgeon, Professor of Anatomy in the Cork School of Medicine and Surgery; late President of the Hunterian Society of Edinburgh, &c. &c.

I have frequently prescribed Franks's Specific Solution, and deem it a valuable remedy in cases where Balsam of Copaiba may be prescribed with propriety, and have no hesitation in stating it is superior to any other preparation of the Balsam. (Signed) H. A. CÆSAR, M.D.

South Mall, Cork, Nov. 9th, 1841.

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Mr. FRANKS may be consulted daily until two o'clock.

ADVERTISEMENTS.

SOVEREIGN LIFE ASSURANCE COMPANY.

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The business of this Company is divided into three principal branches. First,—The Assurance of Life and all the ordinary transactions of Assurance Offices. Secondly,—The advancing an amount in connection with the Policy, and the effecting all pecuniary arrangements connected with Life Assurance. And, Thirdly,—The Granting Annuities (both immediate and deferred), and Endowments, upon a plan adopted only by this Company.

THE ASSURANCE OF LIVES.

The following are among the Advantages offered by this Company:—

Tables of Premiums of Assurances, founded upon the most recent return and the combined experience of existing Life Offices, calculated, for the express use of this Company, at the lowest rates, consistent with perfect security.

Three-fourths of the Profits, or £75 per cent., divided, periodically, amongst the Assured; thus affording the security of a Proprietary Company, having a large subscribed capital, in addition to all the essential advantages of a Mutual Company, without the risk and responsibility attending that system.

Such profits may be made available in the three following ways:—by an immediate payment in cash; by addition to the policy; or, by reduction of the premium.

Participation in the profits derived from Policies granted in connection with Loans and Advances.

All Policies issued by this Company are indisputable; that is, the payment of a Policy cannot be disputed or delayed on account of any error or mis-statement in the proposal.

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Assurances effected for £30, and upwards, upon the payment of one single Premium; or of ANNUAL Premiums; or upon a limited number of payments, or on a gradually decreasing or increasing scale; or the premiums may be paid half-yearly, or quarterly, if more convenient.

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Assurances effected upon the participating scale, or, if preferred, upon a lower scale, without participation in the Profits.

Where the Assurance is for Life, as large a proportion of the premium as is consistent with safety to the Company allowed to remain on credit for Five Years, at the rate of £5 per cent.

Persons Assured so as to be entitled to the Amount of the Policy, either at a given age, say 60, or upon their death, should it occur previously to such age; thus, by the investment of a small portion of their incomes, securing a provision for themselves in their old age, or for their families, should they die before the specified period.

Persons Assured with this Company may reside in any part of Europe, without extra charge; and, if they have occasion to proceed to any other part of the world, can keep up their Policies upon payment of an increased rate, commensurate with the risk incurred; which extra rate will cease upon their return to Europe, in a good state of health.

No extra Premium charged on the lives of Military or Naval men, unless in actual service.

Whole-world Policies are granted to persons assuring the lives of others on payment of an extra rate.

No admission or entrance fee required, nor any charge made for the Policy beyond the amount of the stamp.

Parties desirous of discontinuing the payment of their Annual Premiums may dispose of their Policies to the Company, for a sum of money payable immediately; or, on surrendering them, may obtain a new Policy, without any further Annual Premium, for a sum to be agreed upon, payable at the death of the life assured. The person to whom such new Policy is granted may be entitled, in respect of it, to participate or not in the profits to be periodically distributed.

Persons Assured for Life to the amount of £500, and who have been so for a period of twelve months, have the privilege of voting in the election of two of the Auditors.

Every pains taken to investigate the state of health of the Assured before the proposals for Assurance are accepted, so as to avoid dispute or litigation after death.

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The Company purchases contingent or reversionary Property, grants immediate Survivorships and deferred Annuities, endows Widows and Children, and undertakes all risks contingent upon the duration of life.

Claims paid three months after satisfactory proof of death, or earlier, upon rebate of interest until the specified time of payment.

Policies which have lapsed for non-payment of Premiums renewed upon payment of a fine; satisfactory proof being given respecting the health of the party.

H. D. DAVENPORT, Secretary.

London: Printed by RICHARD RADCLIFFE POWD, of No. 26, Church-street, Old Kent-road, Surrey (at No. 10, Crane-court, Fleet-street, in the City of London), and published by him at the office, No. 17, Upper Wellington-street, in the Parish of St. Paul, Covent Garden, Westminster—Saturday, November 22, 1851.



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VOL. I.

Gutta Percha Carboys. The Gutta Percha Company

have been favoured with the following letter from

MESSRS. JAMES MUSPRATT AND SONS, OF LIVERPOOL.

(Copy.)

Liverpool, 8th September, 1880.

Gentlemen,—In reply to your favour of yesterday, we give it as our opinion that cool Muriatic Acid has no effect on the Gutta Percha. We have now had it in use for nearly a year, and we have no doubt, that in a short time, nothing but Gutta Percha will be used for conveying Muriatic Acid. For, although rather expensive at first, it soon pays for breakage and baskets of glass carboys.—Yours truly,

JAMES MUSPRATT AND SONS.

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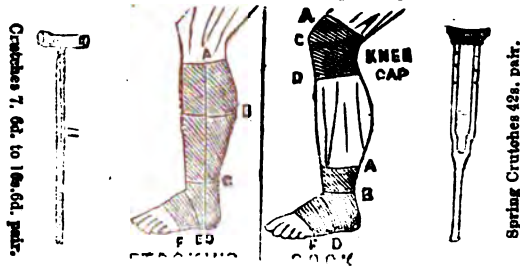
Policies issued from £10 to £5000.

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ADVERTISEMENTS.

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THE LIFE ASSURANCE CHRONICLE: A MONTHLY RECORD OF, AND GUIDE TO, ASSURANCES, ANNUITIES, AND GENERAL FINANCE.

Deeply impressed with the immense benefits derivable by society at large, and by our highly-civilized community in particular, from an organized extension of the great system of Life Assurance, and convinced that the beneficial effects alluded to can never be properly felt till a more extended knowledge of the great principles of Assurance is disseminated, and till an accurate, a faithful, and an impartial record of the progress made and daily making exists, the conductors of the LIFE ASSURANCE CHRONICLE have determined on establishing, under the above title, a Monthly Magazine devoted to the interests and to the advancement of Life Assurance.

No efforts will be spared to place the statistical department of the Magazine on the most accurate and clearest footing; and prompt attention will be paid to every passing topic bearing on Life Assurance, and to the inquiries of any correspondent desirous of obtaining peculiar information.

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MR. RICHARD RADCLIFFE POND.

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They are besides permanently connected and arranged, so as to be at all moments ready for instantaneous use, wherever a cup of vinegar can be procured. No cleansing previous to or after use required.

The new principle on which these powerful and portable Batteries are constructed has likewise been carried out in Weak Chain Batteries for personal use (weight about two ounces), which, when worn on the body, exercise a mild but continuous influence on the same, of a highly beneficial character in many chronic diseases. The effects of these small chains can be perceived the moment the chain is applied to the body; and they likewise decompose unacidulated water.

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C. MEINIG, Manager.

This invention has been illustrated, with success before the Royal College of Surgeons, the Pharmaceutical Society, and the Royal British Association in London; the Académie Nationale de Médecine at Paris, on the 1st of April, 1851, unanimously voted thanks to the inventor, for the communication of the same; and it is already in extensive use in the hospitals of London, Paris, and Vienna.

"I can hardly recommend Dr. Pulvermacher's ingenious invention too strongly to the use of my medical brethren."—Extract of Dr. Golding Bird's Letter, 29th of August, 1851. Published with his kind permission.

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THE NATIONAL IMPORTANCE OF STUDYING
AND PROMOTING ABSTRACT SCIENCE AS A
MEANS OF GIVING A HEALTHY PROGRESS
TO INDUSTRY.

By LYON PLAYFAIR, C.B., F.R.S.

(Continued from page 300.)

Chemists had for some time noticed that various bodies assume different forms, as, for example, carbon, in the states of diamond, graphite, and charcoal. An Austrian chemist, Professor Schrotter, investigating the abstract laws of allotropic forms, inquires whether phosphorus has more than one form, and by heat changes the transparent waxy body into a bright scarlet powder. This scarlet powder is the same phosphorus, but in a state in which it may be kept in the open air, or packed up and transported in casks, and is not readily inflamed by a gentle heat or by friction. Physiologically it has little action on the body, and yet, by proper admixtures, makes as good lucifer matches as the ordinary dangerous phosphorus. By these discoveries the means of giving artificial light is rendered a safe and healthy manufacture. A French chemist discovers that paper, immersed in nitric acid, unites with that body, and becomes highly combustible. Any woody fibre is subsequently found to do the same. This observation lies dormant for years, noticed only as an interesting fact under a long and scientific term in the books of chemists. But one day a Swiss chemist announces the startling fact that the peaceful cotton bales of Manchester may be converted into dangerous ammunition of war, and that cotton, unchanged in its physical appearance, has been made more destructive than gunpowder. There was something appalling in the fact of this peaceful representative of industry being made to assume such destructive properties under the magic wand of the chemist. The chemist now examines cotton in the new form, and, trying to purify it, finds that it is soluble in ether. When left exposed the ether quickly evaporates, and the gun cotton retains a skin-like appearance. Surgeons seize the discovery of the chemist—and gun cotton dissolved can heal the wounds it makes in its dry state. Numerous applications follow; and man, forgetting his fear, uses the gun cotton to silver mirrors, and to produce the portraits of his friends on glass by a process speedy as the daguerreotype.

Another chemist, seeing how readily cotton unites with acids, investigates its power of combining with alkalies; he discovers that it does so, but notices that a contraction ensues in its fibres. Looms are not now required to make coarse calico fine, for immersion in soda makes it take the form of fine cambric. The alkaline calico washed in water loses its soda, but unites with water; and this in turn is displaced by the colours when the calico is dyed, so that it assumes dyes of much greater intensity and brilliancy. Analogous to this is the application of a well known fact to the manufacture of flax and cotton. As long ago as the time of Solomon it was well known that acids produced an effervescence with carbonate of soda; for that wise King says, singing songs to a heavy heart is like pouring vinegar upon natron (mis-translated nitre). This old fact is now used to separate the fibres of flax, and give to it a cotton looking appearance and properties; but this would have been insufficient as a practical result, had it not been that scientific discoveries had shown the existence of a class of bleaching compounds, termed hypochlorites, which enable a few hours to do the work of many weeks. These various facts, one acting upon the other, have led Chevalier Clausen to his interesting discoveries. These various discoveries of Schonbein, Mercer, and others,

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did not in any case arise from a direct practical search, but as offshoots of abstract investigation. Antioch, in the beginning of the fourth century, discovered the importance, as a matter of police, of lighting its streets. But the discovery lapsed, and it was only in the middle of the sixteenth century that Paris lighted up her streets by fires made of pitch and resin. Slowly did this matter of primary police creep on till the end of the last century, when it started forward with extraordinary vigour. Chemists had long observed that coal, on being distilled, produced a combustible gas, and the means of collecting and distributing various kinds of gas were among the common experiments of a lecture table. But it was not till 1792 that Murdoch employed coal gas to light up his offices at Redruth. Now gas has entirely substituted oil in the lighting of streets; but simply as a question of cost, the coals from which it is produced being cheaper than the corn necessary to form and allow, it by no means follows that gas is always the most convenient form of using a combustible. "It would certainly," says Liebig, "be considered one of the greatest discoveries of the age, if any one could succeed in condensing coal-gas into a white, dry, solid, odourless substance, portable, and capable of being placed upon a candlestick or burned in a lamp." A want is rarely clearly expressed by man that science does not administer to it, and already is the desire of Liebig accomplished. A mineral oil flowed out of coal in Derbyshire, and was obviously produced by a slow process of distillation from the coal. It contained solid paraffine dissolved in a liquid oil. Mr. Young, of Manchester, in examining the mode of its formation, found that paraffine, a solid, waxy substance, which had hitherto never been produced from coal, could in reality be readily formed in commercial quantities by a slow and regulated distillation. This, in fact, is "condensed coal-gas," or rather it might be considered as a solid form of olefant gas. It is, therefore, really the want of Liebig supplied. In forming coke, this product, dissolved in an oil of a similar composition, may readily be obtained, and thus coke may be economised in its production by converting into useful products those waste gases which now are thrown uselessly into the atmosphere. It might appear chimerical to you if I were to state many of the consequences which must follow if this discovery in its maturity is found as successful as it promises to be in its dawn; but it is not difficult to see that a cheaper and less carbonised coke would soon render our fires smokeless, and enable us occasionally to see a sun which now refuses to penetrate the sooty canopy of our cities. Hour after hour might be employed in recording the triumphs of chemistry in its investigations into the play of the organic elements. Looking back no further than the last few years, you see how it has thrown open the most hidden processes of animal and vegetable life—how it has taught us to increase and economise the food of man. It is even yet the practice of those who have not followed her discoveries into the wondrous affinities of the few simple organic elements to depreciate the importance of following their infinite creations. If, however, there were no other result from doing so than the one great achievement of having explained the ingredients in food used to build up the muscular frame, and those employed in the support of animal heat, the importance of that discovery would have repaid all the labour of the past century. Almost all the staple manufactures of this country are founded on chemical principles, a knowledge of which is absolutely indispensable for their economical application. In a few educational establishments, and in some of our universities, the alphabet of chemical science is taught; but it requires an institution such as this, devoted to a special object, to teach how to use

that alphabet in reading manufactures. The extension of scientific and technical education is a want of the age. The old and yet widely existing scholastic system of education, introduced by the revival of learning in the fourteenth and fifteenth centuries, is ill adapted to the necessities of the times. Erasmus would not now aid Cambridge in advancing the progress of England, nor would Vitell make Oxford useful to the mass of its population. It would be of little use to the lagging progress of Italy, even if Chrysostom were again to teach Greek in its universities. Euripides and Thucydides cannot make power-looms and spinning-jennies; for these, Watts and Arkwrights are required. A Poggio may discover copies of Lucretius and Quintilian, without thereby producing a result equal to that of the smallest discoveries of a Stephenson or a Wheatstone. When will our schools learn that dead literature cannot be the parent of living science or of active industry? "The great desideratum of the present age," says Liebig, "is practically manifested in the establishment of schools in which the natural sciences occupy the most prominent places in the course of instruction. From these schools a more vigorous generation will come forth, powerful in understanding, qualified to appreciate and to accomplish all that is truly great, and to bring forth fruits of universal usefulness. Through them the resources, the wealth, and the strength of empires will be incalculably increased." Institutions such as this are not substitutes for, but supplements to, the universities. It is the industrial training which we profess, and everything else is made subsidiary to that object. Not that we do or should forget abstract science as such, because I believe the discoveries in abstract laws are of more real benefit to industry than their immediate applications. The technical man is, perhaps, of more use to himself and to his time and generation than he who discovers the abstract laws which the former applies to the purposes of industry, but it is the abstract philosopher who benefits all time, and confers universal and eternal benefit on society. If I have convinced you that it is of infinite importance to a nation not only to study science, as constituting the foundation on which industry rests, but to promote the advancement of abstract science, the soul and life of industry, you will readily understand the importance of institutions, the object of which is to infuse this life into special departments of technology. England has too long rested on the position which it has acquired as a manufacturing nation. This position was gained when local advantages gave an impulse to our practical national mind. But now that the progress of human events has converted the competition of industry into a competition of intellect, it will no longer do to plume and pride ourselves on our power of mere practical adaptations. It is miserable and contemptible to see our industrial population glorying in their ignorance of the principles on which their manufactures depend, by vaunting their empiricism, or, as they term it, their "practice." Let us waken from this delusion, unless we prefer to

"Sit like spent and patient fools,
Still puffing in the dark at one poor coal,
Held on by hope till the last spark is out."

If England is to keep pace with other countries as a manufacturing nation, it must be by her sons of industry becoming humble disciples of science. At present her reliance in the "practical" or "common" sense of her population is the sunken rock directly in the course both of her agriculture and manufactures. On this subject Archbishop Whately has some excellent remarks. "By common sense," says he, "is meant, I apprehend (when the term is used with any distinct meaning), an exercise of judgment, unaided by any

art or system of rules; such an exercise as we must necessarily employ in numberless cases of daily occurrence, in which, having no established principles to guide us, no line of procedure, as it were, distinctly chalked out, we must needs act on the best extemporaneous conjectures we can form. He who is eminently successful in doing this is said to possess a superior degree of common sense. But that common sense is only our second best guide, that the rules of art, if judiciously framed, are always desirable when they can be had, is an assertion for which I may appeal to the testimony of mankind in general, which is so much the more valuable inasmuch as it may be accounted the testimony of adversaries; for the generality have a strong predilection in favour of common sense, except in those points in which they respectively possess the knowledge of a system of rules; but in these points they deride any one who trusts to unaided common sense. A sailor, *e.g.*, will, perhaps, despise the pretensions of medical men, and prefer treating a disease by common sense; but he would ridicule the proposal of navigating a ship by common sense, without regard to the maxims of nautical art. A physician, again, will perhaps condemn systems of political economy, of logic, or metaphysics, and insist on the superior wisdom of trusting to common sense on such matters; but he would never approve of trusting to common sense in the treatment of diseases. Neither, again, would the architect recommend a reliance on common sense alone in building, nor the musician in music, to the neglect of those systems of rules which, in their respective arts, have been deduced from scientific reasoning aided by experience. And the induction might be extended to every department of practice. Since, therefore, each gives the preference to unassisted common sense only in those cases where he himself has nothing else to trust to, and invariably resorts to the rules of art wherever he possesses the knowledge of them, it is plain that mankind bear their testimony, though unconsciously, and often unwillingly, to the preference of systematic knowledge to conjectural judgments." Practice and science must now join together in a solemn union, or the former will soon emigrate to other lands. The time is past when practice can go on in the blind and vain confidence of a shallow empiricism, severed from science "like a tree from its roots." The rudest sailor may steer his ship in the direction of a landmark, but, without compass and sextant, he dare not traverse the expanse of ocean. Ignorance may walk in the path dimly lighted by advancing knowledge, but she stands in dismay when science passes her, and she is unable to follow, like the foolish virgin, having no oil in her lamp. Depend upon it, an empirical knowledge of practice is not the way now to succeed in the struggle of individuals, or in the struggle of nations. Intellect is on the stretch to get forward, and that nation which holds not by it will soon be left behind. For a long time, practice, standing still in the pride of empiricism, and in the ungrateful forgetfulness of what science had done in its development, reared upon its portal the old and vulgar adage, "An ounce of practice is worth a ton of theory." This wretched inscription acted like a Gorgon's head, and turned to stone the aspirations of science. Believe it not! For a grain of theory—if that be an expression for science—will, when planted, like the mustard-seed of Scripture, grow and wax into the greatest of trees. The pressure and difficulties of the age, and the rapid advancement of intellect in continental nations, have been the Perseus to cut off this Medusa's head from the industry of England, and to fix it on the shield of Minerva, who turns to stone such as still believe that science should be ignored by practice, but, reversing that shield, wisely conducts those who would go

further under her guidance. It is now rare to find men who openly avow, although they actually entertain a belief in, a necessary antagonism between theory and practice. Theory is, in fact, the rule, and practice its example. Theory is but the attempt to furnish an intelligent explanation of that which is empirically ascertained to be true, and is always useful, even when wrong. Theories are the leaves of the tree of science, drawing nutriment to the parent stem while they last, and, by their fall and decay, affording the materials for the new leaves which are to succeed.

I have now said enough to show you that it is indispensable in this country to have a scientific education in connection with manufactures, if we wish to outstrip the intellectual competition which now, happily for the world, prevails in all departments of industry. As surely as darkness follows the setting of the sun, so surely will England recede as a manufacturing nation, unless her industrial population become much more conversant with science than they now are.

ON AGRICULTURAL CHEMISTRY.

By M. P. JOIGNEAUX.

(Continued from page 293.)

ON THE MEANS OF RETARDING AND PREVENTING PUTREFACTION OF VEGETABLE AND ANIMAL SUBSTANCES.

The causes of fermentation and putrefaction are now perfectly well understood. They are the same for vegetable as for animal substances—that is to say, they depend on the presence of water, air, and a moderate temperature. Below zero, or above 100° C., fermentation and putrefaction no longer take place; it therefore follows that, by removing bodies subject to decomposition from the influence of air, water, and a mean temperature, their decomposition might be prevented; it follows, also, that a similar result might be obtained by exposing the substances in question to excessive cold or excessive heat.

Fermentation or decomposition being a kind of slow combustion, it is evident that the presence of air or oxygen must be necessary for its maintenance. In illustration of this proposition, if we invert a bell-glass filled with carbonic acid or hydrogen over a trough of mercury, and introduce a piece of meat, the latter may be allowed to remain for the space of several months without acquiring a bad odour or taste. If, however, a few bubbles of oxygen gas or atmospheric air be passed in, decomposition will speedily take place. Putrefaction might also be warded off by using an air-pump to exhaust a vessel in which the food to be preserved had been placed. This is a plan, however, which cannot be applied in practice, therefore I will pass on to others.

Cold is an excellent preservative against putrefaction; organised matter exposed to it may be preserved for an indefinite time. Thus it has happened that, buried in the snows of mountains, or enveloped in the dense ice of the north, entire animals, such as elephants, mammoths, &c., have been preserved from putrefaction for a period of 6000 years at least. A very familiar instance of the preservative agency of cold is known to all housekeepers, by the circumstance that food throughout the winter can be kept unchanged much longer than at other seasons, and in England the plan very generally obtains of enveloping in ice fish which have to be kept for some time in hot weather. In Austria a similar application is had recourse to for the purpose of preserving butchers' meat.

Heat is another common and very excellent means of preventing putrefaction, of which fact we have many familiar examples. Thus, articles of food that have been some time exposed to the heat of boiling water putrefy much less rapidly than such as are quite raw. The exact rationale of this result is not altogether clear, but most probably the explanation is, that the heat converts the raw animal and vegetable juices into jellies and extracts, substances which we know

are less subject to putrefactive agencies than the juices themselves.

Still more effectual is the application of dry heat, and in this case its agency greatly depends on the abstraction of water absorbed by the tissues of the materials to be preserved, and the presence of which greatly favours putrefactive changes. It is owing to the anti-putrefactive agency of desiccation that animal bodies are preserved for so long a time in certain very dry parts of the world, such as the deserts of Africa, Arabia, the American pampas, &c. Apropos of this I may quote the report of an English surgeon, made in the year 1787, without, however, vouching for the truth of this report in all its details. This surgeon relates that, after having disembarked at Visnejo, in Peru, he walked for about four miles on the sand of a bay, covered with the dead bodies of human beings of all ages, so close to each other that he could, had he desired, have stepped for the distance of half a mile on dead bodies. Their appearance was that of people who had not been dead more than a month, but, on touching them, they were found light and dry as pieces of cork. These dead bodies were the remains of a tribe of Indians, who, rather than fall into the hands of the Spaniards, had dug tombs in the sand, and buried themselves alive. The men had with them their bows, all broken; the women had taken each her distaff and spindle, the latter surrounded with cotton in a perfect state of preservation.

Desiccation is without doubt the most efficacious of all preservative means, but, unfortunately, it not only cannot be applied to large pieces of meat, but it also impairs the quality of meat which has been cut up small and thin for the purpose, rendering it hard, deficient in savour, and digested with difficulty. The best plan of applying this desiccating process is as follows:—The food, cut in small bits and thin slices, is to be immersed for the space of five or six minutes in a vessel filled with boiling water; it is then to be removed, put on a trellis, fixed in a hot air stove, and exposed to a temperature of 45 or 50° C. Every portion of the meat which it is desired to preserve is to be plunged successively into the boiling water, which gradually becomes so impregnated with animal extract that it gelatinizes on cooling. When, after the lapse of two days, the meat, now perfectly dried, is taken out of the stove, it is to be immersed in the liquefied jelly, and the whole exposed to stove heat again. On drying, the meat becomes covered with a gelatinous varnish, the thickness of which may be increased by a second immersion. Thus prepared, the meat may be preserved in a dry atmosphere without change, and on soaking it in water acquires most of its original qualities.

The plan of desiccation is had recourse to, as we all know, for the purpose of drying herbs and pharmaceutical preparations, as also for preserving prunes, figs, dates, jujubes, raisins, peaches, pears, apples, cherries, as also the cereales flour, and beetroot for the sugar manufacture.

Desiccation owes its preservative agency to the fact of its getting rid of water, a result which may also be obtained to a certain extent by pressure. Butter, which has been well freed from liquid by pressure, decomposes with far less rapidity than that which is allowed to remain moist; and plants are preserved by the travelling naturalist simply by exposing them to pressure between the folds of bibulous paper.

As I have already mentioned, the great cause of decomposition is the presence of oxygen gas, if the contact with which be prevented decomposition no longer takes place. Founded on an appreciation of this principle are the processes of Sweet's and of Appert. The former consists in boiling a portion of water until totally deprived of air, then pouring it into a vessel containing a few iron filings, put there for the purpose of absorbing any traces of free oxygen which might linger. Into this water the viands to be preserved having been placed, the surface is to be covered with a thin layer of oil. Food thus treated may be preserved for the space of several months.

Far better than this mode of procedure is that of Appert, now commonly employed for the preservation of vegetables and fruits, as well as meat. For the two former glass bottles

are commonly employed, for the latter tin cases, but the principle is in all cases the same. Supposing bottles to be used, the process is this:—Put into them vegetables either in a raw state, or, what is better, scalded in water; then surround the bottles with linen rags or wisps of straw, and thus prepared place them in a bath of water. To this bath heat is to be applied until the water well boils, and, ebullition having been maintained for a certain period, the bottles are to be corked, and access of air prevented by smearing the corks with cement.

The preservation of animal bodies in tin cases is conducted in pretty nearly a similar manner; instead, however, of a water bath being employed, a chloride of calcium bath is generally substituted, for the purpose of imparting a higher degree of heat. Instead, also, of closing the tin canisters by corking, the aperture is hermetically sealed by means of soldering.

The operation of sulphuring is frequently employed for the purpose of checking fermentive decomposition, and its efficacy depends on the circumstance that it converts the atmospheric air into sulphurous acid gas, the preservative agency of which is proverbial. Sulphuring is chiefly applied to the preservation of cider and perry, the fermentation of which under ordinary circumstances takes place with such great facility.

By means of sulphuring one may preserve throughout all the winter sorrel, lettuce, asparagus, and, indeed, most sorts of vegetables. They are to be placed in a barrel, in which a few brimstone matches are to be ignited, and the bung-hole closed with care. Vegetables thus preserved should be immersed for the space of a few hours in cold water before cooking.

The same principle of excluding the presence of atmospheric air is arrived at by the curing of fish and vegetable substances in oil, fat, or butter; a plan very common in the western and central departments of France.

It is well known that eggs, freely exposed to the air's action, soon become unfit for food. Various plans have been devised for preserving them fresh, all founded on the principle of removing them from the influence of atmospheric air. One plan consists in burying them, well separated from each other, in sand, or powdered charcoal; another in plunging them, for the space of about 20 seconds, in boiling water, in order to coagulate a thin layer of albumen on the internal layer of the shell, by which means the ingress of air is prevented. They are now to be wiped dry, and buried in sifted ashes. A still better plan consists in employing a bath of lime-water, which, penetrating the shell, forms, with the albumen, a cement impermeable to air.

Another plan, very highly recommended for the preservation of eggs, is the following:—Plunge them, as already described, into boiling water for a few seconds, then take them out, and, whilst still hot, smear them with a solution of gum mixed with a little syrup, and, lastly, bury them in powdered charcoal.

Chevet, the celebrated Parisian preparer of viands, preserves raisins, nuts, almonds, indeed fruits in general, for considerable periods by means of slacked lime. He forms successive layers of fruits and lime, and, when the vessel is full, he places it, mouth downwards, on a bed of lime some three or four centimetres thick.

In almost every part of the world where potatoes are grown people dig deep pits for the purpose of burying them, and thus excluding the decomposing agency of the atmosphere. In many places a similar treatment is followed for carrots and beetroots, and in applying this treatment care should be taken to select a dry soil. In Spain and in Hungary grain is preserved for many years in large caves excavated in rocks.

Alcohol, as we all know, is a very effectual means of preservation, and one very commonly employed in anatomical museums; but, except in the case of certain fruits, it is totally unadapted to the necessities of domestic economy, not only because of the expense of alcohol, but on account of the disagreeable taste imparted by it to fruits and vegetables. A far more generally eligible preventative body is sugar. Weak solutions of sugar rapidly undergo fermentive change, but strong solutions, or syrups, are not only unchangeable them-

selves, but also protect other bodies from putrefaction. Instead of sugar honey may be employed, a circumstance well known to the ancient Romans, who used it extensively for this purpose. The Badas, a tribe of Ceylon, have a very curious plan of employing honey as a preservative. Having cut the food to be preserved small, and mixed it with honey, they excavate a hole in an odoriferous tree, about a foot from its junction with the ground. This being done, they close the aperture with a plug of wood, and secure the juncture by plastering with earth. Thus treated, they allow the food to remain for 12 months, by which time it will have acquired an agreeable flavour, and have been protected from the slightest decomposition.

Aromatics, indeed, are in themselves very powerful antiseptics, and camphor, the volatile oils, and resin may be especially mentioned as belonging to this class. As to the mode of action of these aromatics, we are still in ignorance. It has been said that, in virtue of their powerful smell, they drive away insects that otherwise would deposit their ova on the food, which ova would become so many foci for generating and extending decomposition; but the explanation is scarcely satisfactory.

The early embalments were conducted by means of balms, and hence the name; but the antiseptic power of volatile oils is chiefly restricted in these days to effect the preservation of ink, glue, and size, which without this treatment are liable to become mouldy and putrid. Leathers, again, if impregnated with oil of turpentine or resin, are not subject to mouldiness; and the antiseptic properties of aniseed, fenugreek, fennel, juniper, and pepper, are too well known for further comment.

Nearly all acids enjoy the property of retarding putrefaction, but acetic acid is especially employed for this purpose. Raw acetic or pyroligneous acid possesses the antiseptic property in a very high degree. When a portion of meat has been plunged into this for a short time, it may afterwards be exposed to the air without fear of change; the meat dries, but does not putrefy. Unfortunately, pyroligneous acid communicates to food such an odour and savour, that its employment as a culinary antiseptic is very limited. This property of pyroligneous acid was known to the ancients. The preparation known as *cedrium*, in Syria, and which served for the purposes of embalment, was nothing more than a rough pyroligneous acid.

It is next to certain that wood vinegar, or pyroligneous acid, wood-smoke, and soot owe their anti-putrescent qualities to the presence of kreasote, a substance discovered by Reichenbach, in 1833, and named by him *kreasote*, or the food preserver. To this substance, when first discovered, various marvellous properties were attributed; among other things it was to arrest cancers, and prevent the toothache. Now I need not say kreasote will not accomplish this, although it will accomplish the preservation of animal substances from decay.

Wood-smoke is a powerful anti-putrescent. In Hamburg large pieces of beef are salted, and suspended in a chamber, where they are exposed to the action of the smoke arising from burnt oak wood for the period of four or five weeks. In smoking meat, the essential rule to be followed is not to develop the smoke with too great rapidity. If this rule be violated, a good result is impossible; the exterior of the food is already extremely smoked, whilst the interior is scarcely touched. When the operation is properly conducted, the smoke is only developed with rapidity towards the end of the operation, for the purpose of creating a thin layer of meat only completely saturated with the fuliginous particles.

The employment of common salt and saltpetre as antiseptics is one of the commonest, these substances having been thus employed for centuries. As regards the nitre, not only is it in itself an antiseptic, but it also has the property of imparting a rose-coloured tinge to the food.

Animal and vegetable charcoal, more particularly the former, are efficacious antiseptics, and may be employed not only for the preservation of animal and vegetable substances, but also to prevent water from becoming unpleasant during long voyages.

Corrosive sublimate, salts of iron, of alumina, of lead,

and soda, are all antiseptics of great efficacy, but, on account of their poisonous nature, are totally unadapted for culinary purposes. Corrosive sublimate is especially excellent for the preservation of dead bodies and anatomical preparations. In order to preserve a corpse by this means, nothing more is necessary than to soak it for the space of two or three months in a solution of corrosive sublimate. By this process, M. Larrey and Ribes preserved the body of Colonel Morland, who was killed in Germany whilst heading a charge of cavalry. Corrosive sublimate is, however, seldom used at this time, on account chiefly of its extreme danger.

In lieu of corrosive sublimate, M. Braconnet has recommended the sulphate of protoxide of iron, whilst alum and protochloride of tin have also their advocates, but perhaps the best antiseptic for anatomical purposes is acetate of alumina, as recommended by M. Gannal. Six or seven litres of acetate of alumina, injected into the carotids, suffice for the preservation of a subject during the space of five or six months, even under the influence of air. With 1 kilogramme of simple sulphate of alumina, 250 grammes of acetate of lead, and 2 litres of water, a mixture is obtained, competent for the preservation of a corpse for the space of four months; and 1 kilogramme of simple sulphate of alumina, added to four litres of water, is competent for the preservation of a dead body for the space of two months. The Institute, after proving the efficacy of M. Gannal's processes, decreed to him a prize of 8000 francs at the public seance of August 21, 1837. Amongst the Egyptians, dead bodies were preserved, not only by the means of balms, but also by injecting into the intestines a caustic liquor, and by plunging the body, for the space of 60 days, into a solution of impure carbonate of soda. After this operation the corpse was taken out, washed, and dried, and then it was frequently plunged into bitumen.

This process of embalment had the disadvantage of altering the form and features, as may be judged of by the aspect of Egyptian mummies. In our days chemistry has made great advancement in the process of embalment, so that we can now obtain mummies more regularly preserved than were those of the Egyptians.

PROGRESS OF SCIENCE AT HOME AND ABROAD.—TRANSACTIONS OF SOCIETIES COMMUNICATIONS, &c.

PARIS ACADEMY OF SCIENCES.

Sitting of November 17.

ON ARTIFICIAL CRYSTALLISATION.

By M. EBELMEN.

In two previous communications M. Ebelmen laid before the Academy an account of the results of his researches in artificial crystallisation, by means of which he had been enabled to obtain, in the state of perfect crystals, several mineral substances, some of which form the basis of rare and precious stones. The solvents employed in those experiments, and which were driven off under the prolonged action of a high temperature were of an acid nature, such as boracic acid, borax, acid phosphates, &c. Since then it has occurred to M. Ebelmen that this method was capable of receiving a new extension, and lead to other applications, if solvents of a basic nature, such, for instance, as alkalis, were employed. These bodies possess, as is well known, the double property of liquefying at temperatures easily obtained in our furnaces, and of entirely volatilising when submitted in open vessels to the prolonged action of a powerful heat. In all the experiments made in this new direction, the elements of the body it was desired to crystallise were dissolved in a silicate charged with a considerable excess of alkali, and submitted to the action of a porcelain furnace, or of a button furnace similar to that referred to by M. Ebelman in his previous communications. The excess of alkali was driven off, and crystals formed in the midst of the

liquid vitreous mass. The presence of silica was necessary, to give to the flux a certain degree of coherence, and to constitute a fusible silicate, in the midst of which the crystals might develop themselves with the desired clearness and sharpness. By this process M. Ebelman has obtained several products completely infusible, and has obtained crystals of glucina sufficiently distinct and large to be tested by the goniometer.

M. Ebelmen has also obtained some excellent results by the substitution of borates, or silicates, in fusion, in place of the solutions previously employed.

GOTTINGEN SOCIETY OF SCIENCES.

Sitting of September 29.

ON THE PRODUCTION OF CYANOGEN, BY MEANS OF THE NITROGEN OF ATMOSPHERIC AIR.

By M. H. RIEKEN.

The question, first raised by the formation of cyanide of potassium in blast furnaces, and which possesses so much importance, both in a theoretical and industrial point of view, whether, under suitable conditions, cyanogen can be produced by means of the nitrogen of atmospheric air, has sometimes been decided in the affirmative, and at other times in the negative. These contradictory views and opinions led M. Rieken to undertake a series of experiments, the positive result of which shows that carbonate of potash, when intimately mixed with charcoal, and submitted to a current of heated nitrogen gas, at a temperature at which the potassium is reduced, is completely transformed into cyanide of potassium. Every conceivable precaution was taken to avoid the formation of cyanogen from any portion of nitrogen or ammonia in the charcoal. The experiments were made sometimes with porcelain tubes, and at others with gun barrels, closed, and heated to the most intense white heat producible by the use of a wind furnace. The indispensable conditions requisite for the production of cyanogen would appear to be a sufficiently high temperature, and the introduction of the nitrogen gas in a burning state, conditions which would materially interfere with the practical application of the process on the large scale.

M. LANDERER ON A METHOD OF PRESERVING GRAPES.

For the purpose of preserving grapes during several months, and almost until the month of April, the following plan is very commonly adopted in the East, more especially at Constantinople:—

Let a hole be dug in the ground about twenty or thirty feet deep by eight or ten wide, in such a way that the cavity may be slightly oval. In this pit the grapes are to be deposited by hanging them all round. Lighted straw is now thrown in, and whilst the pit is still full of smoke the aperture is hermetically closed. If, after the lapse of some months, this pit be opened, the grapes will be found in an excellent state of preservation, and on allowing them to stand for some time in cold water they acquire all their natural freshness. Their preservation is doubtless attributable to the antiseptic agency of carbonic acid, carbonic oxide, and empyreumatic matter, resulting from the combustion of the straw.—*Journ. de Pharm. et de Chim.*, 3 serie, 10e année, tome xx., Oct., 1851.

EXPERIMENTAL RESEARCHES ON PAINTING IN OIL.

By M. CHEVREUL.

The object of painting in oil is to impart to the surface of an object a colour different to that which it ordinarily possesses, and moreover to act as a protection from air, dust, and organic decay.

Without taking cognisance of the pigment itself, three substances enter into the composition of an oil paint, namely, the white, the oil, and the siccatif, or dryer. The

white is to the oil as the mineral part of bones is to the animal constituents, the white being the body, the oil the bond of union.

The ordinary art of painting requires the fulfilment of three conditions. The paint must be sufficiently fluid to extend under the brush, yet sufficiently viscous to be well adherent. After application it must become solid, and, when once solid, it must strongly adhere to any surface on which it may have been put. The first condition may always be fulfilled by the painter, mere touch being sufficient to guide him as to the composition of a paste of the necessary degree of fluidity for his work, as well as the necessary fluidity for combination with any specific colour he may choose to add.

According as the paint be made more or less thick the following results will obtain. When the solidification of the oil is very slow, the oily particles assume a symmetrical molecular arrangement, tending to render them transparent, which they would be did they not envelope opaque molecules in predominating quantity; the resulting painting is then *dead*, as it is termed. When, on the contrary, the opaque particles do not predominate, the surface of the picture becomes shining and brilliant, on account of the light which is reflected by the dried oil.

The second condition, viz., that the paint, after application, should solidify, is no less essential than the first, and this is the chief object of M. Chevreul's memoir.

The oils employed by the painter are of the kind termed siccativ, such as oil of linseed and of poppies. They have the property of absorbing oxygen from the atmosphere, and of becoming converted into solid bodies; in a word, they have the property of drying in the air, according to the common expression, which expression, however, is so far vicious, that the hardening of the oils in question is not dependent on the loss of water, but on the acquisition of oxygen.

Oils naturally siccativ or drying may have the quality still increased by boiling them with certain substances rich in oxygen, and which readily give it off, such as the oxides of lead and of manganese. According to an experiment made by M. Chevreul, three layers of *drying* linseed oil, namely, linseed oil which had been boiled with litharge, hardened in seven days, whereas an equal number of layers of common linseed oil required 46 days.

A very curious circumstance mentioned by M. Chevreul is, that, although drying linseed or poppy oil hardens much more rapidly than either of the corresponding natural oils, still the drying oils harden less rapidly than does their mixture with their respective common oils. According to M. Chevreul, the absorption of oxygen by these mixed oils was found to be four times and a half more rapid in the case of the mixture, than when the oxygenised oil was used alone. Hence it follows that the best siccativ is common linseed oil, mixed with its lithargyrised congener; or, what amounts to the same, linseed oil less perfectly lithargyrised than is usually the case; for instance, linseed oil, incorporated with 10 or 15 per cent. of litharge or oxide of manganese, and exposed to heat for about three hours; or what, perhaps, is better, linseed oil, exposed for some time to the action of air and light. Oil thus treated is colourless.

The drying of paint is not only determined by the circumstance of the oil with which it is mixed, but also by the nature of the pigment itself, and the varying conditions of air and light. Thus white lead singularly hastens the drying of paint, whereas white oxide of zinc has no such property, but white carbonate of zinc is not devoid of considerable drying power.

A paint, made by mixing 12·25 parts of linseed oil with 40·00 of white lead, required 11 hours for the drying of three successive layers. The mixture of 36·55 parts of linseed oil and 40·00 parts of oxide of zinc required 75 hours for the drying of an equal number of layers. 16·66 of linseed oil, 4·60 of drying oil, and 40·00 of white lead required 10 hours, and 37·95 of oil, 7·30 of drying oil, and 40·00 of oxide of zinc only required 16 hours,—all for an equal number of layers.

The influence of surface on which a paint is laid, is very remarkable as influencing the drying power of the paint itself.

A specimen of linseed oil, which, in the month of May, 1851, required 12 or 13 days to dry when applied to tin plate, zinc, iron, porcelain, and glass, required 34 days when applied to a plank of poplar, and only eight days when applied to lead. As regards lead, it is a remarkable fact that zinc paint dries sooner on this surface than a paint of white lead.

Fresh paint, being laid on an old painted surface, dries more readily than on any other.

For the first layer of paint on lead, a mixture of oil and oxide of zinc dries more rapidly than a mixture of oil and white lead; but the second layer, on the contrary, dries with the greater rapidity, if white lead be employed.

It would, appear, then, from the experiments of M. Chevreul, that the terms siccativ and antisiccativ are relative, not positive; varying according to circumstances already detailed.

SOCIETY OF ARTS, MANUFACTURES, AND COMMERCE.

The first meeting of the session 1851-52 was held at the society's house, John-street, Adelphi, on Wednesday evening, November 26—H. T. Hope, Esq., M.P., V.P., in the chair.

The Rev. Dr. Whewell, F.R.S., Master of Trinity, delivered a brilliant lecture "On the general bearing of the Exhibition on the progress of Art and Science." The large room was crowded in every part with an attentive auditory, who joined with acclamation in the vote of thanks to the lecturer, proposed by C. W. Dilke, Esq., and seconded by Dr. Lyon Playfair.

Ten new members were balloted for, and a long list of names of candidates for admission read by the secretary.

On Tuesday evening next, instead of Wednesday, the usual day of meeting, Sir Henry de la Beche, C.B., F.R.S., will deliver a lecture "On Mining, Quarrying, and Metallurgical Processes and Products."

DANGER OF BOTANICAL STUDIES IN TIMES OF POLITICAL REVOLUTION.

[We translate the following anecdote from the "Revue Médico-Chirurgicale;" it may be interesting to our pharmaceutical reader:]—

About the middle of the last century the *rhus radicans*, or *rhus toxicodendron*, was brought from America, and acclimatised in France, where it now constitutes in autumn one of the greatest ornaments of the gardens.

Scarcely had the plant been introduced into Europe before medical science proceeded to number it with the articles of the *materia medica*. In England, in Holland, Germany, and Italy, experiments were made with the new plant, and, whilst some people discovered in it a host of marvellously curative qualities, others arrived at a directly opposite conclusion. The Germans, in short, denominated it a gift of the devil, whilst the Spaniards as fervently pronounced it to be a contribution from heaven.

The "Journal de Physique," of 1782, published the result of its experience, and, to some extent, reinstated the *rhus toxicodendron* in the good opinion of the public, from which it had been greatly alienated, people having begun to consider it rather in the light of a dangerous poison than a useful medicament. The German physician, Clodius, who at first had been an enemy of the plant, confessed that he had been in the wrong to demand its proscription, and, in a memoir full of science, he raised the *rhus toxicodendron* to the rank of medical agencies, the most active and most precious. Now, about the year 1793, there lived at Valenciennes an individual, who not only was a most clever physician, but also a learned naturalist, André Dufresnoy being his honoured name. Having endowed his native town with a course of botanical instruction, he became the botanical professor, and divided his whole time in the instruc-

• We will give a report of this lecture in our next.

tion of pupils and in the cultivation of plants, amongst which the *rhus toxicodendron* appeared to him as likely to play a prominent part in future medicine. After having cured by its exercise several cases of paralysis, he instituted a series of observations, for the purpose of learning its other qualities, and then laboured hard to extend its culture and application. With this view he procured a number of cuttings, and presented them to a physician at Cambrai, to whom he offered detailed instructions for their growth and employment.

In the mean time the coalition of foreigners had surrounded France, and the Convention, with the view of repelling its numerous assailants, had ordered the levy en masse of all men between the ages of 18 and 25, amongst whom were a great number of the medical profession. Dufresnoy received at this time a commission for the hospital of St. Omer, where he proceeded, and where for several months he discharged with zeal and philanthropy the functions which had thus devolved upon him.

It need not be indicated that, in proceeding to St. Omer, Dufresnoy had not only to abandon his thriving practice, but also his botanical plants, on which he set so great a store, and amongst them his cherished *rhus*. This latter sacrifice pained him much. My patients, he was in the habit of saying frequently, may easily find another physician, but my poor *rhus* will not so easily obtain a gardener. This prediction, indeed, was soon verified; for one day in the month of Messidor of the year xi. (June, 1794), Dufresnoy received a communication, intimating that all his patients were supplied to their satisfaction with other physicians, but all his *rhus* plants were dead! This was a thunderclap to the hopes of the naturalist, but reflection told him all might not yet be lost; some of the plants which he had given to his friend at Cambrai might possibly be alive still; to Cambrai, therefore, he determined to write.

Several days had already passed since the mission of his letter, and no reply had come, when one fine morning a member of the committee of safety presented himself, accompanied by two gend'armes: "In the name of the French Republic," said the member, "I deliver you up to the military power;" at the same time exhibiting to him the warrant of arrest, signed by Joseph Lebon.

The physician, who had never interfered in the affairs of Government, was stupefied on coming a little to himself. He demanded the crime of which he was supposed to be guilty. "My mission is to arrest, not to explain," replied the agent; "you will learn all particulars from the tribunal." Accordingly, Dufresnoy was securely incarcerated in the prison of Arras, vainly racking his brains to divine what charge the Government could bring against him. All that he could discover was, that the Citizen * * *, the physician at Cambrai, to whom he had written, was detained no less than himself. Having sought an interview with the latter, the gaoler kindly favoured his views, and the two physicians met. But the mystery was even greater than before; the Cambrai physician could only explain his total ignorance of the motive of his incarceration. All he knew was that he was seized just as Dufresnoy had been, and that the letter relative to the *rhus* plants had never arrived. Whilst the two were still in conversation, an agent from the revolutionary tribunal demanded the two new prisoners. Dufresnoy presented himself first. "Thou art not alone, citizen," said the agent, addressing him, and looking over the official papers; "I want, also, the physician of Cambrai. You are both accused," continued he, "of corresponding on treasonable matters with the foreign powers now conspiring against the republic."

Dufresnoy and his friend were overwhelmed with surprise; they both vehemently protested their innocence. "Your denial avails nothing at this time," replied the man of law abruptly, "for I happen to have the proof in your own handwriting, citizen." Whereupon, opening a portfolio, and turning over some papers, he withdrew, and read the following:—

"The revolutionary tribunal, after having taken cognisance of a letter addressed by Dufresnoy, physician of the hospital at St. Omer, to * * *, physician at Cambrai, which letter was fortunately intercepted by the patriots of the committee

of public safety, the aforesaid committee declares the said Dufresnoy and * * *, of Cambrai, to be guilty of treasonable correspondence against the republic; the committee, therefore, lodges an accusation against them, and commands their immediate arrest by the public authorities, that they may be brought to judgment before the revolutionary tribunal."

"But, citizen," cried the astonished Dufresnoy, "the letter contains nothing to justify this accusation."

"Silence, you two traitors," rejoined the agent. "Does not the letter clearly prove you to have been in treasonable alliance with our enemies? How dare you deny the crime in the presence of such evidence as your own letter?" continued he, with indignation; "but here it is—I will read it." Then, drawing the letter from his portfolio, he read as follows:—

"Morin-la-Montagne (St. Omer had taken this name), Messidor the 25th, year II.

"Citizen,—I wrote to you these few lines to beg you to give me the latest news of our dear *rhus*, for which you have an affection not less fervent than I myself. I long to know, for the good of humanity in general, whether they are getting on well * * * * *"

On hearing this letter read aloud, Dufresnoy, notwithstanding his dangerous position, could no longer remain serious, but gave himself up to a violent fit of laughter.

"You won't laugh long, my friend," snarled the agent.

"But, citizen, I beseech you, permit me to explain," interposed the doctor, laying his hand on the agent's arm.

"Time enough for that when you get before the tribunal," rejoined the man of military law.

The real motive of arrest was now comprehensible. At this period the report was current to the effect that the Empress of Russia was going to join the allied powers. Dufresnoy had demanded of his friend the latest news of his dear *rhus*, and the revolutionary tribunal, not being particularly versed in orthography, suspected the two physicians to be in treasonable correspondence with the Russians.

The day following Dufresnoy and his friend wrote a letter to Joseph Lebon, the proconsul, explaining to him all the mystery of the dear *rhus*. They might have as well allowed the letter to remain unwritten or unsent, for the proconsul remained wedded to his original idea, and the two unfortunates were still in a fair way to be made a head shorter by the decree of a court martial, when, happily, the 9th Thermidor arrived, and set them free. Dufresnoy resumed his studies of the *rhus radicans*, and, after a time, he published an important work upon the virtues of his favourite plant.

INTRAMURAL INTERMENTS.

On Monday, the 24th inst., a deputation from the Metropolitan Sanitary Association had an interview with Lord John Russell, at the Treasury, to present a memorial, calling his lordship's attention to the continuance of interment within the metropolis, notwithstanding the existence, for more than 15 months, of an act of Parliament passed by unusually large majorities, by which her Majesty's Government were empowered to remedy the evils and guard against the dangers proved to attend the burial of the dead amongst the living.

It appears that the Board of Health, to whom the important task of providing for extramural interments had been entrusted, had failed in their effort, for want of sufficient power to treat; meantime, the authorities of various parishes, the churchyards of which were already full, did not feel themselves justified in purchasing fresh ground; hence the condition of metropolitan interment is now more deplorable than ever.

The Bishop of London (one of the deputation) called on the Government to interfere, and take the whole scheme of interments under their guidance, expressing at the same time his hope that the executive powers would not be removed from so respectable a body as the Board of Health. Lord John Russell objected to making the system of interment a Government affair, but pledged himself to bring the whole question before Parliament early next session.

The deputation then withdrew.

Chemical Record

AND

DRUG PRICE CURRENT.

SATURDAY, NOVEMBER 29, 1851.

The circumstances attendant on the origin and progress of the Metropolitan Interments Bill are too firmly impressed on our minds ever to be effaced.

A disposal of the dead repugnant to every notion of decency and hygiene had been so long acquiesced in, that it ceased to provoke comment or inquiry—when a pestilence, unequalled for insidiousness and fatality, came to stimulate us in the progress of a reformation, which, otherwise, would have been allowed indefinitely to stand in abeyance. Whatever might be the abstract nature of the poison of cholera, the proximate causes of the malady could in most instances be traced to putrid emanations, bad air, and filth. The Registrar-General's returns showed this—and established a *prima facie* case against the various foci of putridity, which none could gainsay or doubt. Simultaneously with this contribution to our hygienic knowledge, some harrowing disclosures were made of the revolting scenes enacted in crowded churchyards, for the purpose of disposing of the dead.

Thus in the aggregate there arose such an amount of pressure from without, that, the Board of Health having originated and brought before Parliament the Metropolitan Interment Act—the act passed into a bill by overwhelming majorities, and became the law of the land.

The visitor to the metropolis, who may have taken an interest in this most important sanitary regulation, will have marvelled, we doubt not, to find the sexton's spade as busy as before, and the fresh graves in greater profusion than they ever were. Seldom has act of Parliament been so contravened.

It will be observed, by reference to the report of a deputation which waited on Lord John Russell last Monday, that the explanation of the continuance of intramural interment is this:—The Board of Health find themselves devoid of the necessary power to carry out the stipulations of the bill. They were authorised to take the whole executive of the disposal of the dead under their supervision;—to see the prohibition specified in the bill rigidly abided by, and to purchase the necessary cemetery lands. So far well—but, when the terms of purchase came to be discussed, they found themselves without money, and, worse still, without the means of getting any. Rightly enough, they judged the proposition of raising money by a burial tax to be too objectionable in principle for adoption; yet, no other means presenting itself, they became powerless to carry out the intentions of the bill. Under these circumstances, there has been no alternative but to continue interments as before, and the obnoxious status quo might have been indefinitely maintained, if a fresh evil had not sprung up, of such imminent pressure, that the community will not be able to withstand it long, and the Government will be obliged to give a directive tendency to the quiescent enactments of the bill,

Although not carried into execution yet, the public cannot bring itself to believe this quiescence will be permanent, but imagines that the machinery now at rest may begin to move of a sudden, when least expected. Under these circumstances—parochial authorities, who would have purchased fresh areas of burial ground had conditions remained as they were, do not now feel disposed to do so; and, consequently, grave-yards begin to be more crowded than before. To remedy this most anomalous state of things was the object of the deputation to Lord John Russell; and we regret to observe that its members were prepared with no more definite proposal than that metropolitan interments should be taken immediately under Government superintendence and care. To this Lord John urged an objection which we take to be insuperable. It would be unfair, he said, that the whole kingdom should be taxed for the mere benefit of London, the richest part of it; but Lord John Russell, on his part, was not prepared with an alternative; and, although fully recognising the deep importance of the whole subject, and promising that it should receive the earliest attention of Parliament next session, he could offer no opinion as to the course which should then be taken.

The *Times* newspaper, by means of a process of exhaustion—excluding successively the various people and powers who should *not* be burdened with the executive of interments—arrives at the conclusion that this should be the function of a properly organised municipal body. Perhaps so; but we fear that municipal bodies would find themselves in the position of the Board of Health; namely, that they were endowed with no sufficient power. The whole subject is environed by difficulties, from which it does not seem easy to escape. In our capacity of chemists, it would be foreign to the department of our journalism to speculate on the course which Government may take to give the bill effect; but we trust that, in no case, they will be induced to remove the suggestive portion of its management from the Board of Health.

REVIEWS.

THE INDUSTRIAL EXHIBITION.*

Of the Industrial Exhibition we have hitherto said but little, the subject having been so fully treated of before the commencement of our editorial labours, that we felt we should be consulting the interests of our readers by abstaining from filling our columns, like our contemporaries, with extracts from the Exhibition catalogues, dressed up as original articles.

The Exhibition has now closed, and become matter of history. Of its merits or demerits—of the good or injurious results likely to accrue therefrom, we do not at present intend to hazard even an opinion—

"The evil that men do lives after them;

The good is oft interred with their bones."

In the case of the Exhibition, let us hope that any injurious effects it may have produced lie buried beneath the crystal walls of the building; and that the good alone may live long after the removal of those varied productions of art

* "The Official Descriptive and Illustrated Catalogue of the Great Exhibition of the Works of Industry of All Nations." By Authority of the Royal Commission. London: Spicer Brothers and W. Clowes and Sons. 3 vols.

and science, which have drawn so many millions of delighted visitors to the shrine of industry.

With these prefatory remarks we proceed to notice the work before us; the official record of the most varied and wonderful collection of objects ever beheld, and which formed the Great Industrial Exhibition of 1851.

Upwards of 100 pages of the first volume of the work are devoted to the various indices, directories, historical introduction, description of the building, and classifications of subjects into which the 30 classes of the Exhibition were divided. Every article exhibited, with the name of each exhibitor, and of any person connected with any department of the Exhibition, may thus be found at a glance; and not only this, but the articles are so arranged and classified, that the whole of any particular series of the same kind have been grouped together as far as practicable, thus affording to persons consulting the index, considerable assistance in obtaining the fullest amount of information on any particular subject. Thus, under "magnesia" will be found "bicarbonate of," "sulphate of," and so on; together with reference to the class in the United Kingdom, the colony, or the foreign country in which it is to be found, with the name of the exhibitor.

The historical introduction leads us step by step from the first meeting of a few individuals to the opening by the Queen in person of the great hive of human industry and skill, and details the difficulties which ever and anon threatened the successful issue of the vast enterprise, up to the time when the productions of 15,000 exhibitors, from the four quarters of the globe, were gathered in safety beneath the roof of the Crystal Palace, itself the greatest wonder of the whole.

The classification of the subjects into which the 30 classes of the Exhibition were divided reflects much credit on the ability and industry of Dr. Lyon Playfair, to whose untiring devotion and unremitting application the success of the Exhibition was to a great degree attributable. This treatise will prove of great service in all future attempts at correct classification, and the assistance it affords will, we doubt not, be duly appreciated by our transatlantic friends, in the arrangement of their proposed Exhibition of 1852.

The list of annotators of the catalogue, who have brought their practical knowledge to the elucidation of the various departments with which they were most conversant, comprises men whose names are guarantees of the value of the information furnished by them, and the appendage of whose initials to the articles described, stamps the work with that degree of authority, without which its practical value to the philosopher, the merchant, the manufacturer, or the general reader, would have been greatly lessened.

We must not, in our notice of the introductory part of the work, omit to mention the valuable and interesting series of maps which adorn the commencement of the first volume, and on which the various manufacturing districts of our own and other countries are accurately delineated, and their natural productions shown.

The interest of the Exhibition would doubtless have been much enhanced, had the productions of each foreign state admitted of the same classification as those of our own country, and been exhibited in juxtaposition therewith. Our present intention, however, is not to describe the objects exhibited, but the manner in which those objects are described and illustrated in the official catalogue. First in order, as in importance, comes the class of mining and mineral products, the application of which to the wants and purposes of life lies at the foundation of the present productive and commercial greatness of Great Britain. This class has received the superintending care of Professor Ansted, of King's College, and Mr. Robert Hunt, of the Museum of Economic Geology; the former of whom has

made many valuable annotations on the iron and coal of Great Britain and other mineral products, whilst Mr. Hunt has brought the practical knowledge derived from a residence in Cornwall to an elucidation of the rich mineral products of that county. The information supplied by Mr. Bakewell relative to the iron ores of the country, and by Mr. Sopwith on the lead ores, and the preparation of the metal therefrom, contain a fund of sound practical information not to be elsewhere met with.

The annotations appended to the articles described in the class of chemical and pharmaceutical products have been furnished, for the most part, by Mr. Ellis, Mr. Warren de la Rue, and Professor Ansted, and will be found to contain much useful information. The skilled hand of one of the manufacturing chemists of the north would have been a desirable adjunct to the list of annotators, in order to the more thorough elucidation of the great principles involved in some of those important branches of chemical manufacture, the application of which has proved of so much benefit to the industrial arts and manufactures of Britain.

"The objects in this class do not admit of more than a general grouping into the chemicals of the chemical factories, and the more delicate and refined compounds produced in the laboratory. The former of these, inclusive of large specimens of alum, protosulphate of iron (copperas), and soda, are interesting, as representing a department of British commerce which has grown into importance within a very recent period. The manufacture especially of caustic and carbonate of soda on the great scale, has originated and developed itself in a degree almost unparalleled in the history of commerce within 20 or 30 years of the present time. The fires of the kelp-burners on the shores of the islands of Scotland are scarcely now extinct, when vast factories, employing large numbers of individuals, appear to produce, in enormous quantities, the same alkali which was, until recently, scantily derived from the fused ashes of marine plants. The manufacture of this alkali by an ingenious decomposition of common salt, by the simple aid of sulphuric acid, chalk, sawdust, and coal, is now prosecuted to a vast extent for the supply of the industrial arts generally, the quantity used in medicine and pharmacy being comparatively insignificant. At some alkali works 50 and 60 tons and upwards of common salt are decomposed every week, and converted into caustic, or carbonate of soda. The alum factories are not less extensive.

"The manufacture of sulphuric acid, and of the compounds used by the dyer and calico-printer, also occupies a prominent feature of commercial enterprise."

To these observations we may add, that the annual consumption of sulphuric acid in Great Britain is estimated at 70,000 tons, and the quantity of soda manufactured little short of 200,000 tons. In 1838 we imported 893,061 cwt. of sulphur, the principal part of which was used in the manufacture of sulphuric acid; when the impolitic proceedings of the Sicilian Government led the chemist to the employment of pyrites as a source of sulphur, which has ever since been largely employed in the manufacture of sulphuric acid.

"The application of scientific chemistry to the purposes of medicine is scarcely less recent than the commercial development of chemical manufacture. Medicinal substances appeared for a period to have been overlooked by the chemist, and little attention was given to their preparation. This cannot now be said. The specimens of vegeto-alkaloids, the minerals used in pharmacy, and of their compounds, of beautiful crystalline forms, indicate the progress made in the application of philosophic chemistry to the production of pharmaceutical preparations."

"Valerianic acid," says an annotator, in noticing some specimens of valerianates exhibited, "was discovered some years since, by Prince Lucien Bonaparte, and by him successfully introduced into medicine. It is of considerable

interest to the chemist, from the fact of its having been artificially prepared by M. Dumas, by acting upon amylic alcohol (oil of corn spirit) with caustic potash.

"The valerianic acid is naturally contained in the volatile oil obtained by the distillation of the valerian root in very small proportions. The same acid, however, may be produced artificially, by the indirect oxidation of the fusel-oil separated from crude spirits in the process of rectification, which is the cause of the whisky flavour of grain spirit before rectification. The fusel-oil is heated with a large proportion of caustic potash, when hydrogen is disengaged, and valerianate of potash remains. The acid is easily separated from the remaining valerianate of potash, by distillation with sulphuric acid.

"This offers a beautiful and striking example of the artificial formation of an acid naturally formed by the process of vegetation of the officinal valerian. It has the same composition and properties as the latter, and may therefore be advantageously substituted for it in all pharmaceutical preparations.

"The valerianates comprised in the series exhibited were prepared with the artificial acid, and obtained by oxidising the amylic alcohol with chromic acid; it is a colourless, oily fluid, having a peculiar and disagreeable odour, and possesses all the properties and qualities of that which is obtained from the root of valerian; it forms soluble salts with bases, which are distinguished by the disagreeable smell of the acid, and also by a sweetish taste."

The chapters on "substances used as food," and "animal and vegetable substances used in manufactures," contain much useful matter. Many articles contained in the latter come within the domain of chemistry, and have been indebted to chemical inquiry and research for their useful application. Of these we may mention the stearine of vegetable and animal oils and fats, the application of which in the manufacture of candles has opened a new and wide field of commercial enterprise. The beautiful colours and dyes, yielded by many articles in this class, are all modified and improved by the skill of the chemist; whilst the process of preserving timber and cordage from decay, by the application of chemical substances, owes its origin to chemical investigation.

In the chapters treating on "machines for direct use," and "philosophical instruments," &c., will be found descriptions of various kinds of apparatus of interest to the chemist, the pharmacist, and the manufacturer. These parts of the work, as well as others on machinery, engineering, &c.—a knowledge of the principles of which are so necessary to the man of business, whatever may be his occupation—are amongst the most valuable of the entire work. The descriptions have been furnished by experienced hands, and the illustrations are of first-rate character. The description of the various surgical instruments contained in Class 10, and of the improvements effected in their manufacture, will prove of great interest to many of our readers.

The contents of the second volume, embracing the wide range of the textile, hardware, gold and silver, and ceramic manufactures, together with furniture and decorative art, manufactures in animal and mineral substances, miscellaneous manufactures, and the fine arts, are of greater interest to the general reader than the more exclusive departments described in the first volume. In noticing this volume, then, we address our readers, not as chemists, or pharmacutists, but as members of the great family of man, who have bodies to be clothed, and feet to be shod, and who require the hollow ware and locks of Staffordshire, the cutlery of Sheffield, the glass of Newcastle, the china and earthenware of modern Etruria, as indispensable necessities of every-day use. A work, therefore, which treats so fully on these points, and which contains so much useful practical information, must be fully appreciated and estimated by them. The specimens of the ornamental arts of working in gold, silver, and precious

stones, of the manufacture of papier maché and decorative furniture, are well described and illustrated, and the annotations thereon abound in interest.

The section on manufactures from mineral substances contains descriptions and illustrations of chemical pottery, slate filters, and other objects of interest to chemists, as well as a fund of varied information on the materials employed in building and decoration. Amongst the articles grouped in miscellaneous manufactures, our readers will notice many in which they are practically interested, and from the perusal of the description of which they cannot but derive much information. The last division, that of the fine arts, sculpture, &c., brings us back again to the general reader, who will find much in this class worthy of notice and attention.

The second volume also contains India and the other British possessions. India has had the advantage of Professor Royle's judicious annotations, or rather dissertations, and the pharmaceutical reader will glean many useful hints from their perusal. The illustrations of Indian handicraft and skill which adorn this part of the work are also of superior excellence.

The third volume offers a wide field, over which the chemist, the merchant, the mechanic, the manufacturer, the philosopher, the man of refined taste, and the general reader may roam with much satisfaction. In this volume we have the productions of the foreign states who contributed to the world's great gathering described and illustrated. Some of the more liberal and enlightened of the foreign commissioners have contributed large stores of information relative to the raw products and manufacturing industry of their respective countries, as in the case of Switzerland, Spain, Austria, Greece, &c., adding much to the value of the work, whilst the numerous splendid engravings, more particularly those illustrative of the Russian, Spanish, and Austrian contributions, render this volume peculiarly interesting and attractive. Under "Austria," we find that

"The production of chemical preparations, especially of those which have been brought forward by the great progress of manufactures in general, has latterly, owing to this impulse, furnished important results. Bohemia has especially distinguished herself by the manufacture of colours and of chemical preparations used in dyeing, whilst Vienna has not remained behind. Several of these productions—acids and easily inflammable articles, saltpetre, phosphorus, &c.—are not exhibited, on account of the danger of carriage. Saltpetre is also an article of state monopoly, but is chiefly manufactured by private individuals, who are bound to deliver their productions to the state. The refining, on the contrary, is principally provided for by the state itself. In 1847, the quantity of saltpetre produced amounted to 21,600 cwt. This was chiefly applied to the manufacture of gunpowder, and also to other purposes. The progress of this trade, however, is but inconsiderable.

"Soda and potash are produced in Hungary in large quantities. The crystallised soda found on the soil is estimated at 30,000 cwt. annually, and the entire production in Hungary at 40,600 cwt., whereof about 10,400 are distributed over the other provinces. In these last, altogether, the same quantity is produced as is raised in Hungary alone; and there is to be added thereto the amount of the excess of imports (66,000 cwt.) over exports (66,000 cwt.), being 1000 cwt.

"Of potash, about 350,000 cwt. are produced, and of this quantity 200,000 cwt. in Hungary, the remainder chiefly in Galicia. The production not only covers the whole demand for home consumption, but leaves a considerable excess for export. Thus, in the year 1847, the imports of potash amounted to 11,900 cwt., whereas the exports were 41,900 cwt."

The information furnished in connection with the description of Austrian products and manufactures generally is of a high character, and is the more valuable from the

circumstance that the rapid industrial progress this country has of late years been making was really but little known and understood in this country.

"It is a fact universally known, that on the southern coasts of Spain, in many of the regions adjacent to her shores, and in the Canary Islands, the "*salsola soda*," and other species of salts from whence the crystallised carbonate is derived, have been produced spontaneously, as at present, from time immemorial. But this branch of national industry has been seriously interfered with, by the introduction into commerce of artificial alkalis. Yet the manufacturers of neighbouring countries, in which natural kali abounds, continue notwithstanding to employ the Spanish product, in spite of its incontestible disadvantages for the saponification of oils.

"Carbonated kali, in its natural state, is procured in the island of Teneriffe, in an almost horizontal bed, at the base of the Pic or Volcano of Teida. It is extremely plentiful in the province of Burgos, and is found imbedded in layers of argillaceous clay and sulphated chalks, among the hills on the banks of the river Tiron, a tributary of the Ebro. This mineral is worked in situations where it can be dissolved in water, which is afterwards evaporated, in order to obtain the crystallised sulphate. When this product is calcined, it assumes the name of sulphate anhydride. In its first state, it is sold for 3 reals the arroba; in its second, at double that price, that is to say, from 3 francs 25 cents to 6 francs 50 cents the quintal of 48 kilogrammes.

"Saline springs are encountered likewise in many parts of Spain, the density of whose waters is from seven to eight degrees Baumé; their waters flow down from the hills, and are found to contain sulphuretted kali in solution. Such springs are to be met with at Cervera, in Catalonia.

"Of still more recent origin are the excavations for Glauber salts. But a much greater scope for the sale of this product may be anticipated, and its much more lucrative employment, from the introduction of other branches of trade into Spain, where at present the whole consumption of sulphate of soda is actually limited to a single glass manufactory in the village of Rosas, in the province of Santander."

Of the native carbonate of magnesia, specimens of which were exhibited from Greece, we extract the following account from the official catalogue:—

"Impure carbonate of magnesia occurs native, in considerable masses, in the form of magnesite, constituting a range of low hills in Hindostan. It is also abundant in Greece. It is found in Eubœa, especially in the district of Kironile, where there are entire hills of it. The mines are worked, some belonging to public companies, and others to private gentlemen. It is extracted in the villages of Limin, Kotiskia, and Matondi, &c.; that of the last-named village is of the best quality. From the neighbouring ports more than 40,000 cwt. are annually exported to Smyrna and England."

We cannot conclude our brief and imperfect notice of this important work, which Dr. Whewell commended in his inaugural lecture at the Society of Arts, on Wednesday evening, without stating, that the highest credit is due to the publishers for furnishing so complete a record of the Great Industrial Exhibition. When we consider the immense difficulties attendant on the production of such a work—the joint production of more than 1,500 authors, whose varied contributions, in many languages, had to be classified and arranged, and, as far as practicable, annotated and explained—when we consider that this vast amount of matter was actually in type at the opening of the Exhibition, before even the articles were fully arranged in the building, we cannot but regard the "Official Illustrated and Descriptive Catalogue" as being itself one of the wonders of the Exhibition. As respects the general style and getting up of the work, we need only say that it is worthy of the publishers, who have evidently spared neither cost nor pains to bring out a work every way worthy both of the great industrial undertaking and of public

patronage and support. The library of the philosopher, the merchant, the manufacturer, the man of science and of refined taste, will be incomplete without the possession of a copy of this truly national work, which, interleaved, will serve the valued purpose of a record of the varied additions to our knowledge which every day present themselves to our attention, but which, from the want of a suitable place for their immediate record, pass from the memory almost as soon as received. New facts and discoveries, in any department of art and science, whether at home or abroad, would here find a local habitation—a place in which to be recorded, always easy of reference and access—and thus a vast amount of practical and useful information, now lost, would be stored up for the future advantage of ourselves and others.

PULVERMACHER'S HYDRO-ELECTRIC CHAIN BATTERIES.

We have been very much delighted with a chemical scrutiny of this elegant contrivance for developing voltaic electricity extemporaneously, and applying it on the instant to any purpose for which voltaic electricity is eligible.

To those acquainted with the principle on which voltaic combinations are effected, it will suffice to say that, instead of availing himself of discs or plates to form the voltaic series, Dr. Pulvermacher has adopted the use of wires of two dissimilar natures—wound tightly round a peg of wood, without touching each other. By this means the most favourable conditions of voltaic development are secured. The wood absorbs and retains the exciting liquid (acetic acid) for a considerable period; the oxide of zinc is dissolved by the subsequent immersion, and free access to atmospheric oxygen obviates the inconvenience which results in many batteries from the evolution of uncombined hydrogen. Each of the wooden pegs, with its compound coil of wires, is a simple voltaic combination; and a series of the latter, regularly joined according to the ordinary laws of voltaic construction—becomes a voltaic battery capable of giving shocks, decomposing even non-acidulated water, emitting sparks, and, indeed, of manifesting all the ordinary properties of voltaic electrical force.

It will easily be recognised that the power, whether of quantity or intensity of this elegant apparatus, may be increased indefinitely. For this purpose, nothing more being necessary than to join together so many chains as may be adequate to the desired effect. By joining the chains end to end, there is produced an effect of intensity; by connecting them in such a manner that each quality of wire on each peg may virtually join its fellow on a contiguous peg, we have the effect of quantity.

The apparatus of Dr. Pulvermacher is capable, as we have said, of imparting a powerful shock; but probably the physiological effects of an insensible current are still more valuable as a curative means. That such a current is really set up, by mere contact with the acid emanations of the human skin, we have assured ourselves by the undoubted evidence of the galvanometer.

We have seldom been so highly gratified with the inspection of an ingenious apparatus; and all who are interested in the theory and application of voltaic electricity cannot do better than inspect Dr. Pulvermacher's chains, at the dépôts, 103, Leadenhall-street, and 71, Regent-street.

SPECIFICATIONS OF CHEMICAL PATENTS.

Hugh Barclay, of Regent-street, in the county of Middlesex, for "improvements in the means of extracting or separating fatty and oily matters, in refining and bleaching fatty matters and oils, animal and vegetable wax, and resins; and in the manufacture of candles and soap." Patent dated May 19.

Specification of this patent, not enrolled when due, Dec. 19.

Peter Spence, of Pendleton, Manchester, manufacturing chemist, for "improvements in the manufacture of alum, and certain alkaline salts; and in the manufacture of cement; part of which improvements are applicable in obtaining volatile liquids." Patent dated Nov. 12, 1860. Enrolled May 12, 1861.

The patentee's first improvement consists in the manufacture of alum from shale, schist, fire-clay, &c.; the shale of the coal measures being preferred. The shale is first calcined in heaps in the open air, as directed in the patentee's specification of November, 1845, for improvements in the manufacture of alum. After undergoing this process of roasting, the shale is to be treated by one of the three following modes of operation, according to the texture and quality of the shale employed:—

First Process.—Into a leaden vessel or tank, placed in brickwork, about four feet deep, and of any convenient size or shape, put one-fourth its content of sulphuric acid, of sp. gr. 1.75, and to it add a quantity of hot shale from the calcining heaps. Stir the mixture so as to cause the shale to absorb the acid, and fill the tank to within six inches from the top; then cover the whole with spent shale or ashes, and allow it to stand four or five days, by which time, the mass assumes a dry appearance, and the acid has become saturated with alumina. Next remove the contents of the tank, and place them in another lead vessel, four feet deep, and of any convenient size, provided with a false bottom of tiles, placed about six inches above the bottom of the tank; and to the prepared shale add boiling-hot distilled ammoniacal gas-liquor, prepared and treated in the way hereinafter mentioned. Allow the mixture to stand one hour, to dissolve out the sulphate of alumina in the shale; then run off the clear liquor into leaden coolers, to crystallise as alum; fresh portions of boiling ammoniacal liquor may be added, two, three, or four times, and afterwards the residue may be washed with boiling water, to remove all traces of sulphate of alumina.

Second Process.—If the first process does not yield sufficient alumina, take the shale after it has been exposed to the action of the sulphuric acid in the tank for 12 hours, and is become nearly dry, and place it in a reverberatory furnace, into which the heat from the flue of a steam-boiler or furnace is allowed to enter, the heat being regulated by means of dampers, and kept at about 200° to 212° Fah. After about 8 or 10 hours' exposure to this heat, the shale is ready for the extraction of the sulphate of alumina it contains by the process before mentioned.

Third Process.—When the shale does not absorb at least half its weight of sulphuric acid, the third process is to be adopted. For this purpose a reverberatory furnace 50 feet long, and 5 feet wide, is employed, containing a lead vessel of the length and width of the interior of the furnace, and of the depth of 6 inches: this lead vessel is nearly filled with the calcined shale, and sulphuric acid of sp. gr. 1.75, in quantity equal to about half the weight of the shale, is then added; the heat from the fire at both ends is directed over the contents of the furnace, and, after exposure to a moderate heat for 8 or 10 hours, the shale is removed to the tank for the extraction of the sulphate of alumina, in the manner before described.

Another improvement relates to the distillation of ammoniacal liquor; it is also applicable to the manufacture of ammoniacal salts, and the distillation of volatile liquids. The following is his mode of distilling gas-liquors:—A series of four boilers or vessels are placed one above the other, so that the contents of the one may admit of being drawn off into the next vessel placed below it; each of these vessels contains gas-liquor, from a reservoir, of which a pipe passes to the upper vessel of the series, which is also furnished with an exit pipe. Into the lower vessel of the series high pressure steam is passed, causing the gas-liquor to boil, and, the heated vapour of ammonia and water being allowed to pass off through an exit-pipe into the next vessel, the gas-liquor of the second boiler is soon brought to boil, and the heated vapours passing off to the third produces the same effect,

until at length the liquor in the uppermost vessel is also made to boil. The heated vapour which now passes off from the upper vessel of the series is loaded with ammonia, derived from the gas-liquor of the several vessels, and is thence conducted into the acid mother-liquors before mentioned, obtained in the manufacture of alum; or into any of the acids employed to form crystallised ammoniacal salts. The advantages of this arrangement are, great economy of fuel, and more complete exhaustion of the gas-liquor before it is run off to waste. Each distillatory vessel is furnished with a cock, to allow the passage of the liquor from one to the other through the whole series. From the last vessel the exhausted gas-liquor is run off. As the gas-liquors often contain some fixed ammoniacal salts, the patentee recommends the addition of lime to the contents of the vessels.

Another improvement consists in the manufacture of certain alkaline salts, such as carbonate of soda from sulphate of soda, and carbonate of potash from sulphate of potash. For this purpose, a sulphide of barium, or hydrosulphuret of baryta, is prepared, by heating sulphate of baryta with carbonaceous matters in the usual way; to the solution of sulphide of barium a solution of sulphate of soda is added, by which means sulphate of baryta is precipitated, and a solution of hydrosulphuret of soda remains in solution. The boiling hot solution of hydrosulphuret of soda is then charged with carbonic acid gas, heated to about 200° Fahr., the solution of the salt being made to pass through a perforated iron plate into an iron chamber, 20 feet high by eight in diameter, filled with coke. The solution, trickling through the coke, comes in contact with the heated carbonic acid gas made to enter the bottom of the chamber, sulphuretted hydrogen is liberated, and, passing off through an exit pipe at the top of the chamber, may be employed in the manufacture of sulphuric acid; whilst the solution of carbonate of soda is drawn off through a cock, placed in the lower part of the chamber, and evaporated to form soda ash, or set aside to crystallise. The carbonic acid gas employed may be obtained from chalk, by the action of hydrochloric acid; or, if the sulphuretted hydrogen be not required for the manufacture of sulphuric acid, the carbonic acid gas required may be obtained from a charcoal furnace. The process above described, for the manufacture of carbonate of soda from sulphate of soda, is equally applicable to the manufacture of carbonate of potash from sulphate of potash.

The patentee states, that he does not confine himself to the mode above specified of obtaining solutions of the hydrosulphurets of soda and potash, nor to precise details of his method of carbonating the same; and he also states, that he is aware that a somewhat similar mode of manufacturing the carbonates of soda and potash has already been patented, the difference between his process and the other consisting in the fact of his employing carbonic acid at an elevated temperature, whilst in the other process carbonic acid at ordinary temperatures is employed, which is ineffectual in producing the desired result.—*Patent Journal.*

MUSEUM OF THE PHARMACEUTICAL SOCIETY.

Messrs. Howard and Kent, of Stratford, manufacturing chemists, have presented to the museum the very valuable and useful collection of more than 30 specimens of Peruvian bark, which occupied a place in the class of Chemical and Pharmaceutical Products in the Exhibition:—

Barks yielding quinine and cinchonine, viz:—1. Various descriptions of calisaya bark (*cinchona calisaya*). 2. Carabaya bark (*cinchona ovata*). 3. Cusco bark (*cinchona pubescens*). 4. Carthagenia bark (*cinchona cordifolia*). 5–8. Specimens of red, crown, grey, and loxa barks. 9. Various descriptions of barks used for adulteration. 10. *Cinchona Australis*. 11. *Cascarilla macrocarpa*. 12. *Cascarilla corua*. 13. *Cascarilla magnifolia*. 14. *Buena hexandra*. 15. *Exostema Peruviana*, or *tacumex* bark. 16. *Laplacea quinodermia*.

Messrs. Howard and Kent have also presented some very fine specimens of muriate, sulphate, di-sulphate, citrate, phosphate, acetate, and tartrate of quinine; also of cinchonine and sulphate of cinchonine.

PRICE CURRENT OF DRUGS, &c.

Articles having bd. or bond annexed are sold at short price exclusive of duty; when no duty is affixed the article is free. Add 5 per cent. to the duty on all articles excepting those having an asterisk prefixed. F. means foreign; B.P. British possessions.

DRUGS, &c.		Price.	
		£. s. d.	£. s. d.
ALKANET ROOTcwt.		1 14 6	2 10 0
ALOE, Barbadoes		1 10 0	6 0 0
Hepatica		1 10 0	5 0 0
Cape		1 5 0	1 18 0
ALUM, British ton		7 10 0	8 5 0
Rochcwt.		1 0 0	1 4 0
AMBERGRIS, Grey oz.		4 8 0	7 0
ANCHOVIES dble. bri.		17 0 0	18 0
ANGELICA ROOTcwt.		1 0 0	1 5 0
ANNATTO, Flaglb.		1 0 0	1 2
Bell		0 8 0	1 0
ANTIMONY, Crudecwt.		1 8 0	0 0
Oreton.		19 0 0	0 0
Regulus Cps.cwt.		2 4 0	3 0 0
Bowle		2 15 0	2 13 0
ARROW ROOTlb.		0 2 0	1 0
ARSENIC, Whitecwt.		17 0 0	18 0
Red		0 0 0	0 0
English White		12 6 0	1 0
Yellow		19 0 0	1 0 0
ARGOL, Bolognacwt.		2 0 0	2 12 0
Florence White		2 0 0	2 8 0
Red		2 0 0	2 5 0
Naples White		1 18 0	2 5 0
Red		1 19 0	1 13 0
Sicily White		1 8 0	1 16 0
Red		1 8 0	1 10 0
French		1 14 0	2 7 0
Cape		1 15 0	2 11 0
ASPHALTUM, Egyptian		2 10 0	4 15 0
BORACIC ACIDcwt.		2 12 0	2 13 0
BALSAM, Canada lb.		0 9 0	1 0 0
Capivi		1 2 0	1 7
Peru		5 0 0	5 3
Tolu		3 6 0	4 0
BARILLA, Spanish ton		0 0 0	0 0
Teneriffe		0 0 0	0 0
Sicily		0 0 0	0 0
East India		0 0 0	0 0
BARK, Peruvian, pale lb.		1 6 0	2 6
Good		0 0 0	2 0
Mid., do.		1 1 0	1 2
Crown		1 3 0	2 2
Yellow, Flat		3 0 0	4 4
Quill		2 0 0	6 0
Red, Flat		7 0 0	4 6
Quill		1 0 0	1 15 0
Cascarillacwt.		8 8 0	9 6
Quercitron		8 8 0	9 6
Oak, English, per load		13 0 0	14 0 0
Foreign, per ton		3 0 0	6 5 0
New S. W.		5 0 0	8 0 0
BERRIES, Baycwt.		19 6 0	1 6 0
Juniper, Italian		7 6 0	8 0
German		8 0 0	12 0
Turkey, Yellow		3 15 0	6 0 0
Persian, do.		8 0 0	14 0 0
BLACK LEAD, E. I.cwt.		5 0 0	16 0
Malaga		1 0 0	1 5 0
German		1 0 0	1 3 0
Dust		2 0 0	12 0
BORAX OR TINCALcwt.		2 0 0	0 0
E. I. Refined		2 17 0	2 18 0
English Refined		3 10 0	3 12 0
BRIMSTONE, Rough ton		9 0 0	9 5 0
Roll		12 0 0	0 0
CAMPBOR, Unrefinedcwt.		3 5 0	0 0
Dutch		3 7 6	0 0
* Refined lb.		1 0 0	1 1
CANTHARIDES, bd.		2 0 0	3 0
CAPERS, Frenchcwt.		7 0 0	13 0 0
Capotts		6 0 0	7 10 0
CARDAMOMS, Malabar lb.		2 6 0	2 9
Long Longs		2 10 0	3 0
Ceylon		1 3 0	1 4
CASTOR OIL, America lb.		0 0 0	0 0
E. L., bd.		0 2 0	0 4 0
CHILINS, E. I.cwt.		12 0 0	1 5 0
CHINA ROOTcwt.		10 0 0	1 0 6
COCHINEAL, Honduras Black lb.		3 2 0	4 10
Silver		2 9 0	3 6
Mexican Black		3 2 0	3 9
Silver		2 8 0	3 0
COBALT lb.		0 0 0	0 0
COCCULUS INDICUScwt.		1 1 0	1 4 0

DRUGS, &c., continued.		Price.		B.P. 4d. F. 6d. per lb.
		£. s. d.	£. s. d.	
COFFEE, Jamaica, triage and ord.		1 13 0	1 17 0	nominal.
good and fine ord.		1 18 0	2 6 0	
low to good middling		2 8 0	3 10 0	
fine middling & fine		3 12 0	4 10 0	
Demerara, triage & ord.		0 0 0	0 0	nominal.
good and fine ord.		0 0 0	0 0	
low to good mid.		0 0 0	0 0	
Berbice, triage and ord.		0 0 0	0 0	
good and fine ord.		0 0 0	0 0	nominal.
low to fine middling		0 0 0	0 0	
Dominica and St. Lucia, triage and ordinary		0 0 0	0 0	
good and fine ord.		0 0 0	0 0	
low to good middling		0 0 0	0 0	nominal.
Ceylon, ordinary to very good ord. native		1 19 6	2 1 0	
fine ord. to mid. plu.		2 5 0	2 14 0	
good mid. to fine do.		2 16 0	3 15 0	
Mocha, ord. & ungarbled clean garbled		2 0 0	2 10 0	B.P. 1d. F. 2 per lb.
fine		3 8 0	3 15 0	
Sumatra, Padang, &c. ..		4 0 0	4 15 0	
Java		1 15 0	2 0 0	
Mysoore with certificate		2 2 0	2 10 0	B.P. 1d. F. 2 per lb.
Brasil, ord. to fine ord.		1 18 0	2 10 0	
ex. fine plant. kind		1 16 0	2 15 0	
St. Domingo		2 0 0	2 10 0	
Havannah, ord. to g. ord.		1 18 0	2 0 0	B.P. 1d. F. 2 per lb.
fine ord. to mid.		2 2 0	2 10 0	
Cuba, ord. to good ord.		1 18 0	2 2 0	
fine ord. to middling		2 4 0	2 15 0	
Porto Rico		1 18 0	2 18 0	B.P. 1d. F. 2 per lb.
La Guayra		1 18 0	2 12 0	
Costa Rica		2 0 0	3 5 0	
COCOA, Trinidad, red		2 0 0	2 7 0	
grey		1 12 0	2 0 0	B.P. 1d. F. 2 per lb.
Grenada		1 12 0	2 3 0	
Para, St. Domingo, and Bahia		1 6 6	1 8 0	
Guayaquil		1 12 6	1 13 6	
COLOCYNTH, Turkey lb.		0 6 0	1 9	B.P. 1d. F. 2 per lb.
Spanish		0 11 0	1 6	
COLOMBO ROOT		1 5 0	3 10 0	
COPPERAS, Green, bc. .. ton		1 10 0	2 15 0	
Blue		8 0 0	1 10 0	B.P. 1d. F. 2 per lb.
CREAM TARTAR, French ..		2 18 0	3 8 0	
Venetian		3 5 0	3 8 0	
CUBEScwt.		5 10 0	6 6 0	
CUTCH		17 6 0	18 0	B.P. 1d. F. 2 per lb.
DRAGON'S BLOOD .. lump		3 10 0	9 15 0	
Reed		8 0 0	14 10 0	
DYEWOODS: Brasil ton		45 0 0	80 0 0	B.P. 1d. F. 2 per lb.
Barwood, Angola		0 0 0	0 0	
Camwood		13 15 0	28 15 0	
Fustic, Brasil		0 0 0	0 0	
Cuba		8 10 0	9 0 0	B.P. 1d. F. 2 per lb.
Jamaica		4 0 0	5 0 0	
Spanish		4 0 0	4 10 0	
Zafte		0 0 0	0 0	
Logwood, Campeachy		6 10 0	6 15 0	B.P. 1d. F. 2 per lb.
Honduras		5 0 0	5 10 0	
Jamaica		3 10 0	4 0 0	
St. Domingo		4 0 0	5 0 0	
Nicaragua, Lima		14 0 0	15 5 0	B.P. 1d. F. 2 per lb.
solid		12 0 0	17 0 0	
small and mid.		6 10 0	12 0 0	
Red Sanders		4 10 0	5 10 0	
ESSENTIAL OILS		2 8 0	5 4	B.P. 1d. F. 2 per lb.
Cloves, bd. lb.		6 3 0	5 4	
Caraway		3 6 0	7 0	
Lavender		4 0 0	11 0	
Peppermint, bd.		4 0 0	0 0	B.P. 1d. F. 2 per lb.
Spike		4 0 0	0 0	
Aniseed, bd. lb.		5 8 0	5 9	
Cassia, bd.		10 3 0	0 0	
Cayaput, bd. oz.		0 3 0	0 4 0	B.P. 1d. F. 2 per lb.
Cinnamon, bd.		0 8 0	2 6	
Mace (expd.), bd.		0 2 0	0 4	
Nutmegs, bd.		0 4 0	0 5 0	
Butamot lb.		8 9 0	9 9	B.P. 1d. F. 2 per lb.
Lemon		7 6 0	8 3	
Orange		6 9 0	7 0	
Rosemary		1 8 0	2 6	
Thyme		3 9 0	3 0	B.P. 1d. F. 2 per lb.
Otto Roses oz.		13 6 0	1 0 0	
Almonds lb.		1 5 0	0 0	
GALANGAL ROOT, bd. ..cwt.		14 0 0	1 4 0	B.P. 1d. F. 2 per lb.
GALLS, sortscwt.		3 0 0	3 15 0	
Green or White		2 10 0	3 12 6	
Blue		4 12 0	4 15 0	
E. I. Blue bd.		3 10 0	5 0 0	B.P. 1d. F. 2 per lb.
GENTIAN ROOTcwt.		1 1 0	1 2 0	
GLUE, Best Towncwt.		1 5 0	1 0 0	

DRUGS, &c., continued.		Price.	
		£. s. d.	£. s. d.
GLUE, Interior	..	0 0 0	0 0 0
Foreign	..	1 10 0	2 5 0
GUINIA GRAINS, bd. ..	..	0 2 0	2 4 0
GUTTA PERCHA lb.	..	0 7 0	0 10 0
GUMS:			
Ammoniac, Lp. .. .	.. cwt.	9 6 0	1 10 0
Drop	..	1 15 0	3 15 0
Arabic, E. I. .. .	..	1 0 0	4 12 0
Cape	..	13 0 0	1 2 0
Turkey, fine .. .	..	8 10 0	10 0 0
2nds and 3rds .. .	..	3 10 0	6 0 0
Australian	..	1 17 0	3 0 0
Barbary, Brown .. .	..	1 15 0	3 10 0
White	..	3 5 0	3 15 0
Gedda	..	5 0 0	6 0 0
ANIMI, washed .. .	..	5 0 0	13 4 0
scraped	..	6 0 0	13 13 6
Copal lb.	..	0 6 0	2 8 0
ASAFOETIDA .. .	.. cwt.	10 0 0	4 10 0
BENJAMIN, 3rds .. .	..	3 5 0	9 10 0
1st and 2nds .. .	..	10 0 0	28 0 0
DAMMAR	..	1 10 0	3 0 0
GAMBOGE	..	5 0 0	11 12 6
GALBANUM	..	2 10 0	3 0 0
GUAIACUM lb.	..	0 6 0	1 0 0
MYRRH, E. I. .. .	.. cwt.	1 10 0	10 0 0
MASTIC lb.	..	3 0 0	6 6 0
OLIBANUM	.. cwt.	8 0 0	2 18 0
SANDRACH	..	2 6 0	3 10 0
SENEGAL, garbled ..	..	3 0 0	3 15 0
TRAGACANTH, Picked	..	13 0 0	17 0 0
Sorts	..	3 10 0	10 0 0
LAC, Sticklac, Bengal	..	17 0 0	1 15 0
Siam, &c. .. .	..	2 10 0	3 8 0
Shellac, Liver .. .	.. cwt.	2 2 0	2 5 0
Kuby	..	3 5 0	3 10 0
Orange	..	2 5 0	3 14 0
Block	..	1 1 0	2 3 0
Blood	..	1 18 0	2 15 0
Seedlac	.. cwt.	1 0 0	2 0 0
HULLBORN ROOT .. .	.. cwt.	1 18 0	0 0 0
HONEY, Fine	..	1 5 0	2 10 0
ISLAND MOSS lb.	..	0 2 0	0 3 0
INDIA RUBBER, solid	..	0 8 0	0 9 0
bottles	..	1 0 0	1 8 0
small	..	1 9 0	2 6 0
INDIGO lb.	..	6 0 0	6 3 0
Bengal, fine blue ..	..	5 0 0	5 9 0
good and fine violet and purple	..	4 0 0	4 9 0
ordinary and middling ..	..	4 9 0	5 3 0
good and fine copper ..	..	3 3 0	4 6 0
ordinary and middling ..	..	4 3 0	5 0 0
Consumers, good and fine	..	3 3 0	4 0 0
ordinary and middling ..	..	None.	
Java, good and fine ..	..	3 0 0	4 0 0
Oude, good and fine ..	..	2 0 0	2 9 0
ordinary and middling ..	..	3 6 0	4 6 0
Madras, good and fine ..	..	1 6 0	3 3 0
ordinary and middling ..	..	4 0 0	5 8 0
Kurpah, good and fine ..	..	2 0 0	3 9 0
ordinary and middling ..	..	None.	
Manilla good and fine ..	..	4 6 0	4 8 0
ordinary and middling ..	.. lb.	10 0 0	13 6 0
ISPECACUANA	..	9 0 0	10 0 0
ISINGLASS LEAF, 1st sort ..	..	2 0 0	2 9 0
2nd sort	..	5 0 0	6 0 0
Simovia	..	8 0 0	14 0 0
Siberia Furze	..	10 0 0	14 0 0
Short Staple, 1st .. .	..	0 6 0	5 6 0
Long ditto	..	2 0 0	2 4 0
ISINGLASS, Brazil .. .	.. gal.	0 10 0	1 0 0
JALAP lb.	..	1 6 0	2 0 0
JUICE OF LEMON .. .	..	1 0 0	1 4 0
LAC DYE, Fine lb.	..	0 9 0	1 0 0
Good	..	0 3 0	0 8 0
Middling	..	0 3 0	0 8 0
Ordinary	..	3 5 0	3 12 6
Lake	.. cwt.	4 0 9	5 15 0
LIQUORICE Paste, Ital. ..	..	2 6 0	2 10 0
Block	..	2 2 0	2 5 0
MADDERS, Dutch Crop ..	.. cwt.	1 5 0	1 10 0
Ombro	..	8 0 0	12 6 0
Gamene	..	0 0 0	0 0 0
Mull	..	1 10 0	2 0 0
French	..	1 6 0	1 10 0
Spanish	..	2 0 0	2 2 0
MADDER ROOTS, Turkey ..	.. lb.	3 0 0	3 6 0
MAGNESIA, English .. .	..	1 0 0	1 6 0
MANNA, Flakey	..	18 0 0	1 2 0
Sticky	.. cwt.		
MUNJRET, E. I. .. .	..		

5s. per cwt.

B.P. 5 F. 10s.

Public Sale Prices.

F1 0 0 cwt.
BP 10 0 cwt.

DRUGS, &c., continued.		Price.	
		£. s. d.	£. s. d.
METALS:			
Copper Brt. Cakes ..	.. ton	88 10 0	0 0 0
Tile	..	87 10 0	0 0 0
Sheets lb.	..	0 10 0	0 0 0
Bottoms	..	0 11 0	0 0 0
Old	..	0 8 0	0 0 0
R. American	.. ton	86 0 0	0 9 0
Foreign Cake .. .	..	0 0 0	0 0 0
Foreign Tile .. .	..	0 0 0	0 0 0
IRON, British Bars .. .	..	5 2 6	5 10 0
Rods	..	6 5 0	6 15 0
Hoops	..	7 0 0	7 10 0
Sheet	..	7 15 0	8 5 0
Cargo in Wales Bars	..	4 7 6	4 12 6
Pigs No. 1 Wales ..	..	3 0 0	4 0 0
No. 1 Clyde .. .	..	1 19 6	2 6 0
Russian .. C.O.N.D.	..	0 0 0	0 0 0
P.S.I.	..	0 0 0	0 0 0
Archangel	..	0 0 0	0 0 0
Swedish	..	11 10 0	12 10 0
LEAD, British:			
Pigs ton	..	16 10 0	0 0 0
Sheet milled .. .	..	18 0 0	18 5 0
Shot Pat.	..	19 10 0	20 10 0
Red or Minium .. .	..	18 10 0	19 0 0
White	..	23 0 0	25 0 0
Litharge	..	19 0 0	0 0 0
Piz Spanish .. .	..	0 0 0	0 0 0
American	..	0 0 0	0 0 0
STEEL, English:			
Swedish Keg .. .	..	14 10 0	15 10 0
Fagot	..	15 10 0	16 0 0
TIN, Blocks	..	4 4 0	0 0 0
Ingot	..	4 10 0	0 0 0
In Bars	..	4 5 0	0 0 0
Banca bd.	..	4 0 0	4 1 0
Straits bd.	..	3 19 6	4 0 0
Peruvian	..	0 0 0	0 0 0
Plates, p. bx. of 25 Sheets:	..		
No. 1 C 13 1/2 by 10 in. ..	..	1 3 0	0 0 0
1 X	..	1 11 0	0 0 0
1 XX	..	0 0 0	0 0 0
SPELTER on the spot ..	.. ton	14 5 0	0 0 0
Delivery	..	14 7 6	0 0 0
ZINC, English sheet ..	..	21 0 0	0 0 0
PLATINA ORE	.. oz.	0 0 0	0 0 0
ORSIDEW lb.	..	0 0 0	0 0 0
MUSK, good and fine ..	.. oz.	10 0 0	1 5 0
NUX VOMICA, bd. .. .	.. cwt.	7 0 0	9 6 0
OILS—Imperial measure:			
Olive, Florence, 1/2 chest ..	..	15 0 0	18 0 0
Lucca, 1/2	..	5 0 0	0 0 0
Gallipoli, 253 gals. ..	..	40 0 0	41 0 0
Spanish, ditto .. .	..	39 0 0	39 10 0
Linseed cwt.	..	1 7 9	1 8 0
Rape, Pale	..	1 12 0	1 14 0
Brown	..	1 12 6	1 12 0
Cod tun.	..	36 10 0	0 0 0
Seal, Pale	..	34 10 0	0 0 0
Brown, yell. and straw	..	31 0 0	34 0 0
Sperm	..	84 0 0	85 0 0
Head Matter	..	90 0 0	96 0 0
Whale, Greenland .. .	..	0 0 0	0 0 0
South Sea	..	32 0 0	34 0 0
Cocoa Nut cwt.	..	1 10 0	1 15 0
Palm cwt.	..	27 0 0	0 0 0
OLIVES, French 1/2 barrel ..	.. gals.	3 0 0	4 0 0
Spanish, keg 2 galls. ..	..	9 0 0	10 0 0
OPIUM, Turkey, bd .. .	.. lb.	8 6 0	12 0 0
Egyptian	..	6 6 0	8 6 0
ORCHELLA, Angola .. .	.. ton	35 0 0	0 0 0
Cape de Ver. .. .	..	25 0 0	35 0 0
Madeira	..	30 0 0	0 0 0
ORPIMENT, E. India .. .	..	0 0 0	0 0 0
ORANGE FLOWER water ..	.. lb.	0 8 0	0 0 0
Peel	..	5 0 0	0 0 0
ORIS ROOT	.. cwt.	1 18 0	2 2 0
PELLITORY ROOT .. .	.. lb.	0 6 0	0 0 0
PINK ROOT	.. lb.	0 5 0	0 8 0
PITCH, British .. .	.. cwt.	5 6 0	0 0 0
Archangel	..	7 6 0	0 0 0
Stockholm	..	12 0 0	0 0 0
Burgundy	.. cwt.	0 0 0	0 0 0
PUMICESTONE, sorts ..	.. ton	5 0 0	8 0 0
QUASSIA	.. cwt.	6 0 0	8 0 0
QUICKSILVER lb.	..	3 4 0	0 0 0
RHATANIA ROOT .. .	.. lb.	0 5 0	0 8 0
RHUBARB, round .. .	..	0 3 0	2 6 0
Flat	..	0 3 0	2 6 0
Dutch, trimd. .. .	..	2 6 0	3 0 0
Russian	..	10 0 0	12 0 0

per cwt. unwrought 4s.
B.P. 8s. 9d. F.
wrought B.P.
5s. F. 10s. old
B.P. 3s. 6d.
old F. 7s. 6d.6 0
0 0B.

10 per cwt.

5 0 p. wt

2 0 2 0 gall.
0 1 0 p. lb.

DRUGS, &c., continued.		Price.	
		£. s. d.	£. s. d.
SACCHARUM SATURNI, bd... lb.		0 0 0	0 0 0
SAPPHON, Spanish .. lb.		1 3 0	1 8 0
*SAGO common .. cwt.		10 0 0	10 6 0
Pearl ..		15 6 0	1 5 0
Sago Flour ..		12 0 0	13 0 0
SAL AMMONIAC, E. I. .. cwt.		1 10 0	1 13 0
English, Refined ..		1 18 0	0 0 0
SALTS, Glauber ..		6 6 0	7 0 0
Epsom ..		6 0 0	6 0 0
SALP ..		8 15 0	14 5 0
SARSAPARILLA, Brazil .. lb.		0 10 0	1 3 0
Honduras ..		0 10 0	1 6 0
Vera Cruz ..		0 4 0	0 5 0
Jamaica ..		1 6 0	3 1 0
SASSAPARA ROOT .. ton		10 0 0	12 0 0
SAFFLOWER, E. I. .. cwt.		3 10 0	7 10 0
Bombay ..		15 0 0	2 0 0
SHUMAC, Malaga .. cwt.		12 0 0	13 6 0
Silly ..		14 6 0	15 0 0
Trieste ..		4 6 0	6 6 0
SALTETRE, Rough ..		1 4 6 0	1 8 6 0
British, Refined ..		1 9 6 0	1 10 0 0
Nitrate of Soda ..		14 9 0	15 0 0
British, Refined ..		0 0 0	0 0 0
SCAMMONY, Smyrna .. lb.		5 0 0	7 0 0
Aleppo, Sds ..		10 0 0	15 0 0
fine ..		1 8 0 0	1 15 0 0
SEEDS, Aniseed .. cwt.		2 2 0 0	2 5 0 0
German ..		2 2 0 0	2 5 6 0
E. I. Star ..		3 17 0 0	3 18 0 0
Cumin ..		2 15 0 0	8 10 0 0
Caraway, Foreign ..		19 0 0	1 10 0 0
SENKA ROOT .. lb.		0 6 0 0	1 0 0 0
SENNA, Alexandria .. lb.		0 2 0 0	0 6 0 0
Smyrna ..		0 0 0 0	0 0 0 0
East India ..		0 0 0 0	0 3 0 0
Tinnevely ..		0 7 0 0	0 10 0 0
SMALTS, Saxon, FFFE .. lb.		1 2 0 0	0 0 0 0
Danish, FFFE ..		1 7 0 0	0 0 0 0
FFFE ..		1 3 0 0	0 0 0 0
FFFE ..		1 8 0 0	0 0 0 0
FFFE ..		0 0 0 0	0 8 0 0
SOAP, Naples, soft .. lb.		1 6 0 0	1 8 0 0
Castile, hard .. cwt.		3 0 0 0	0 0 0 0
British, Mottled ..		2 2 0 0	2 4 0 0
Yellow ..		1 18 0 0	2 2 0 0
White ..		2 14 0 0	0 0 0 0
Scented ..		0 0 0 0	0 0 0 0
Windsor ..		0 0 0 0	0 0 0 0
Oil ..		0 0 0 0	0 0 0 0
Soft B. B. ..		1 0 0 0	0 0 0 0
B. S. ..		0 0 0 0	0 0 0 0
B. ..		0 0 0 0	0 0 0 0
Sosa .. ton.		5 17 6 0	0 0 0 0
ASHES, Canada Pot. 1st. cwt.		1 9 0 0	1 10 0 0
Pearl 1st ..		1 8 0 0	0 0 0 0
United States Pot ..		0 0 0 0	0 0 0 0
Pearl ..		0 0 0 0	0 0 0 0
Soy, bd. .. gallon		4 0 0 0	0 0 0 0
STICKS—			
Cassia Ligna, ord. to mid.		5 15 0 0	5 16 0 0
good to fine ..		5 17 0 0	6 0 0 0
Cassia Buds ..		7 0 0 0	0 0 0 0
Cinnamon, Ceylon, 1st quality ..		1 6 0 0	2 2 0 0
2d ..		1 1 0 0	2 2 0 0
3d ..		6 10 0 0	1 7 0 0
Malabar ..		0 0 0 0	1 0 0 0
Tellieberry ..		0 8 0 0	1 0 0 0
Cloves, Amboyna ..		0 7 0 0	0 9 0 0
Bourbon & Zanzibar ..		0 6 0 0	0 6 0 0
Penang ..		0 10 0 0	1 2 0 0
Ginger, Bengal ..		15 0 0	2 10 0 0
Malabar ..		16 0 0	3 8 0 0
Jamaica ..		1 18 0 0	11 10 0 0
Barbadoes ..		0 0 0 0	0 0 0 0
Mace ..		1 10 0 0	2 7 0 0
Nutmegs, brown ..		1 10 0 0	3 9 0 0
lined ..		1 4 0 0	3 0 0 0
Pepper, bd. Malabar, heavy shot ..		0 34 0 0	0 34 0 0
light and half heavy ..		0 34 0 0	0 34 0 0
Eastern ..		0 34 0 0	0 34 0 0
white ..		0 6 0 0	0 11 0 0
long ..		0 0 0 0	0 0 0 0
Pimento ..		0 54 0 0	0 54 0 0
SPONGE, fine .. lb.		9 0 0 0	1 5 0 0
ordinary ..		1 0 0 0	7 6 0 0
SPIRITS OF TURPENTINE .. cwt.		1 13 0 0	1 14 6 0
SULPHATE OF QUININE .. oz.		11 9 0 0	12 0 0
SQUILLA, dry .. lb.		0 1 0 0	0 2 0 0
undried ..		0 0 0 0	0 0 0 0
SPERMACE, English .. lb.		1 4 0 0	1 5 0 0
American ..		0 0 0 0	0 0 0 0
STARCH, English ..		2 6 0 0	2 12 0 0
Irish ..		0 0 0 0	0 0 0 0
POTATO FALINA ..		14 6 0	15 6 0
TALLOW: Petersburg, new .. cwt.		1 17 0 0	0 0 0 0

DRUGS, &c., continued.		Price.	
		£. s. d.	£. s. d.
TALLOW: old ..		1 16 0 0	1 16 6 0
Delivery last three months ..		1 16 9 0	0 0 0 0
South American ..		1 14 0 0	1 17 0 0
Odessa Sheep ..		0 0 0 0	0 0 0 0
North American ..		0 0 0 0	0 0 0 0
Australian ..		1 14 0 0	1 17 0 0
Town Tallow, Mar. Let. cwt.		1 18 6 0	0 0 0 0
Fat by ditto ..		2 1 0 0	0 0 0 0
Russian Candle ..		1 19 6 0	0 0 0 0
Melted Stuff ..		1 9 0 0	0 0 0 0
Rough ditto ..		18 0 0	0 0 0 0
Graves ..		9 0 0 0	0 0 0 0
Good Dregs ..		6 0 0 0	0 0 0 0
PRICES OF CANDLES, per doz.:			
Mould Candles ..		6 0 0 0	7 0 0 0
Store ditto ..		4 6 0 0	5 6 0 0
TAMARINDS, West Ind. .. cwt.		1 0 0 0	2 0 0 0
East Ind., bd. ..		12 0 0	15 0 0
*TAPIOCA .. lb.		0 14 0 0	0 5 0 0
TEA: bd.			
Bohea, Canton, & Woping ..		0 6 0 0	0 7 0 0
Poken ..		0 0 0 0	0 0 0 0
Congou, ordinary and out ..		0 8 0 0	0 8 0 0
good ordinary ..		0 8 0 0	0 8 0 0
mixed blackish leaf ..		0 9 0 0	0 10 0 0
rather blackish leaf ..		0 10 0 0	0 11 0 0
blackish leaf ..		0 11 0 0	1 0 0 0
ditto rather strong to strong ..		1 0 0 0	1 0 0 0
Pekoe kind and flavour ..		1 1 0 0	1 6 0 0
Ning Yung, fair to fine ..		0 11 0 0	1 6 0 0
Pouchong ..		0 9 0 0	1 0 0 0
Caper, chests ..		0 0 0 0	0 0 0 0
do. in 10 lb. Catty boxes ..		0 11 0 0	1 6 0 0
Campol, common ..		0 0 0 0	0 0 0 0
good to fine ..		0 0 0 0	0 0 0 0
Soucheong, ordinary to good ..		0 9 0 0	1 2 0 0
fine ..		1 4 0 0	2 0 0 0
Flowery Pekoe, flat ..		1 0 0 0	1 2 0 0
fair to fine ..		1 6 0 0	2 3 0 0
very fine and flowery ..		2 4 0 0	3 0 0 0
Black leaf Pekoe or Hong Muey ..		0 10 0 0	1 4 0 0
Orange Pekoe, faint & odd ..		0 11 0 0	0 11 0 0
common to fine plain ..		1 0 0 0	1 1 0 0
common to fine scented ..		1 1 0 0	1 9 0 0
Twankay, common ..		0 10 0 0	0 11 0 0
good ..		1 0 0 0	1 1 0 0
fine to Hyson kind ..		1 2 0 0	1 3 0 0
Hyson Skin, common ..		0 10 0 0	0 11 0 0
good to fine ..		1 0 0 0	1 2 0 0
Hyson, common ..		1 1 0 0	1 3 0 0
fair to good ..		1 4 0 0	1 9 0 0
fine ..		2 0 0 0	2 6 0 0
extra fine ..		2 10 0 0	3 10 0 0
Young Hyson, common ..		0 9 0 0	1 1 0 0
good to fine ..		1 2 0 0	2 7 0 0
Imperial, common ..		1 1 0 0	1 4 0 0
good to fine ..		1 5 0 0	2 6 0 0
Gunpowder, common ..		0 8 0 0	1 7 0 0
good to fine ..		1 9 0 0	4 0 0 0
TURMERIC, Bengal .. cwt.		12 0 0	14 0 0
Java ..		10 0 0	12 0 0
Madras ..		10 0 0	14 0 0
TERRA JAPONICA .. cwt.		1 0 0 0	0 0 0 0
Sienna ..		1 2 0 0	1 4 0 0
VALONIA, Smyrna .. ton		15 0 0	17 0 0
Picked Morea ..		13 0 0	14 0 0
VANILLAS, Brazil .. lb.		1 10 0 0	2 12 6 0
Vera Cruz ..		1 5 0 0	1 10 0 0
VERDIGRIS, Foreign ..		0 9 0 0	0 10 0 0
English ..		1 3 0 0	0 0 0 0
VERMILION, China .. lb.		3 0 0 0	4 0 0 0
English ..		5 0 0 0	0 0 0 0
VITRIOL, blue ..		1 8 0 0	1 10 0 0
Foreign, white ..		14 0 0	0 0 0 0
Oil of ..		1 4 0 0	1 5 0 0
Oil of ..		0 1 0 0	0 9 0 0
WAX, Mogadore .. cwt.			
American ..		6 0 0 0	6 15 0 0
Russian ..		5 15 0 0	6 0 0 0
Hambro' ..		7 10 0 0	8 0 0 0
East India ..		6 0 0 0	8 15 0 0
African ..		5 10 0 0	7 0 0 0
White Hambro' ..		7 0 0 0	8 10 0 0
English .. cwt.		2 0 0 0	9 15 0 0
Cape ..		5 15 0 0	6 15 0 0
West India ..		6 10 0 0	7 10 0 0
WELD .. load		0 0 0 0	0 0 0 0
WOOD .. ton		0 0 0 0	0 0 0 0
Wood, Sapan Bimas ..		8 0 0 0	11 10 0 0

B. P. 1d.
Foreign
1s. 6d. per
cwt.

B. P. 1d.
F
3d.
6d. per cwt.

2s. 1d. per lb.

5s. per cwt.

5s. per cwt.

1s. B. P. 2s. 6d.
F. per cwt.

PUBLIC SALES OF DRUGS.

November 27.—By C. L. JENKIN.—231 serons Crown Bark, 5d. to 5½d., sold; 8 ditto Maracaibo Bark, 5d., out; 100 bgs. Cassia Fistula, 22s., out; 10 cs. Castor Oil, 3½d. to 3¾d., out; 7 pkgs. Seneka Root, 1s. 4d. to 1s. 5d., out; 10 tins Balsam Tolu, 3s. 6d., out; 8 bls. Sarsaparilla, 7d., out; 20 cs. Manna, 1s. 3d. to 1s. 4d., out; 4 jars Essence Lemon, 7s. 6d., out.

THOMAS MERRY and SON.—107 brls. Tapioca, 2½d. to 4½d., sold; 4 chta. Pi ked Gum Arabic, £6; 4 cs. Croton Oil, 3½d., out; 3 ditto E. I. ditto, 4d., out; 40 bgs. Cummin Seeds, out; 1 seron Sarsaparilla, out; 10 serons Cascarella Bark, 10s., sold; 160 bgs. Sicily Shumac, 13s.; 7 cks. Asphaltum, 35s.; 4 cks. Red Florence Argol, 45s.; 12 brls. 36 jars Balsam Capivi, 1s. 6d. to 1s. 6½d., out; 70 bxs. Gum Kino, 23s. to 25s. 6d., sold.

By ALFRED T. FAWKES.—118 cs. Castor Oil, 2½d. to 3d., sold; 5 ditto Cinnamon, ditto, 1s. to 1s. 2d., sold.

By PRICE, GIFFORD and Co.—261 serons Yellow Bark, 1s. to 5s. 6d.; 10 tons Spanish Chalk, £10, out; 20 chta. Shellac, 35s. 6d. to 36s.; 100 brls. Spanish Blacklead, 14s. 6d., bought in; 30 cs. Liquorice Paste, 65s., bought in; 20 ditto Juice, 60s., bought in; 12 cs. Oil Peppermint, 8s. 6d., out; 28 tins Balsam Tolu, 3s. 3d. to 3s. 4d., bought in; 8 cks. 12 cs. Starch, 5s. 6d. to 8s., bought in; 12 bgs. Myrabolanes, 7s.; 186 bgs. Turmeric, 10s. 6d. to 12s. 6d.; 36 bkts. Roll Annatto, 5d. to 5½d.; 3 bgs. Bark, 9d.; 4 bgs. Cowries, 50s.; 17 bdls. Sarsaparilla, 1d.; 3 cs. Tamarinds, 3s.; 6 ditto Castor Oil, 3½d.

By ELLIS and HALE.—25 bls. Lima Sarsaparilla, 5d. to 1s. 4d., sold; 15 serons Honduras Sarsaparilla, 1s. 9d., out; 20 serons Ipecacuanha, 4s. 6d. to 4s. 8d., sold; 25 bxs. China Vermillion, 4s. 3d., out; 54 cs. Gum Olibanum, 10s. to 42s., sold; 24 cs. Gum Benjamin, £6. 10s., out; 13 cs. Gum Myrrh, £7. 10s. to £7. 12s. 6d.; 2 cs. Gum Mastic, out; 75 cs. Gum Damar, out; 7 brls. Gum Copal, £5, sold; 15 chta. Gum Arabic, 30s.; 6 chta. Assafetida, 20s.; 2 cs. Cantharides, out; 160 cs. E.I. Tamarinds, 15s., out; 50 chta. Rhubarb, 1s. 8d. and 1s. 3d. to 1s. 4d., sold; 10 cks. Asphaltum, 26s. to 27s. 6d., sold; 10 bgs. Anniseed, 50s.; 3 bls. Camomile Flowers, out; 23 bgs. Camomile Flowers, 22s. to 31s., sold; 10 cks. fine new Cod Liver Oil, 8s.; 3 cs. Oil Sassafras, 3s. 6d.; 4 bls. Sponge, 10d.; 11 kgs. Honey, 49s. to 50s.; 2 chta. Dragons' Blood, £8. to £12. 5s.; 10 chta. Seedlac, 27s.; 3 chta. Sticklac, 20s.; 6 cs. Cape Aloes, 28s. to 31s. 6d.; 11 cs. Zanzibar Aloes, £6; 1 cs. Hyraceum, 2s.; 6 cks. discoloured Cream Tartar, 55s.; 6 chta. Gum Ammoniacum, 35s.; 1 jar Orange Flower Water, 9½d.; 12 bgs. Turkey Blue Galls; 12 chta. Shellac, 48s., out.

By LEWIS and PEAT.—130 ch. Gum Olibanum, 8s. 6d. to 58s., sold; 43 ch. Gum Myrrh, 14s. to 97s. 6d., sold; 17 ch. Gum Animi, £3. 7s. 6d. to £9. 5s.; 9 ch. Gum Ammoniacum, 15s. to 34s. 6d., sold; 1 case Dragon's Blood, £12, out; 2 cs. Hepatic Aloes, 91s.; 26 bgs. Fennell Seed, out; 82 bgs. Myrabolanes, 7s. 6d.; 25 ch. Gum Benjamin, £3. 7s. 6d. to £7; 19 ch. Gum Arabic, 6s. to 50s., sold; 11 ch. Gum Tragacanth, £3 to £8. 10s., out; 5 ch. Assafetida, 51s., 72s.; 5 cases Gum Copal, 9d. to 10d., out; 367 jars Bals Peru, 5s. 3d., out; 93 cs. Castor Oil, out; 34 arns. Quill Yellow Bark, out; 19 bgs. Cardamoms, 1s. 8d., 1s. 11d.; 7 ch. Beeswax, £6. 7s. 6d. to £8. 10s.; 12 bxs. Gum Kino, 27s. to 28s.; 17 ch. Garnet Shellac, 60s. to 57s., sold; 58 bdls. E. I. Senna, out; 9 caddies Tonquin Musk, 8s. 6d. to 9s.; 3 pkgs. Cowage, 1s. 6d. to 1s. 8s.; 4 bxs. Vermillion, 1s. 7d. to 1s. 9d.; 4 cs. Cinnamon Oil, in bond, 1s. to 2s. 3d.; 3 cs. Citronella Oil, 4½d.; 226 bot. Cajeputa Oil, 8d., out; 200 Barbadoes Aloes, out; 5 bls. Sarsaparilla, 5½d.

Extract from the Returns, made by the Board of Trade, of Imports with the United Kingdom during the ten months ending October 10, 1851; compared with those of the corresponding periods of 1850 and 1849:—

Ashes, Pearl and Pot, 96,551 cwts. against 96,506 cwts. in 1850, and 90,826 cwts. in 1849.

Canna Ligna, 151,657 lbs. against 940,395 lbs. in 1850, and 337,778 lbs. in 1849.

Cinnamon, 414,998 lbs. against 534,244 lbs. in 1850, and 505,273 lbs. in 1849.

Cochineal, 12,168 cwts. against 18,778 cwts. in 1850, and 11,734 cwts. in 1849.

Cloves, 103,342 lbs. against 369,937 lbs. in 1850, and 144,682 lbs. in 1849.

Mace, 46,549 lbs. against 28,991 lbs. in 1850, and 21,737 lbs. in 1849.

Nutmegs, 225,059 lbs. against 157,869 lbs. in 1850, and 117,292 lbs. in 1849.

Opium, 69,116 lbs. against 78,886 lbs. in 1850, and 84,837 lbs. in 1849.

Olive Oil, 9,461 tuns against 18,670 tuns in 1850, and 13,704 tuns in 1849.

Pepper, 2,618,069 lbs. against 4,267,038 lbs. in 1850, and 2,811,201 lbs. in 1849.

Pimento, 8,536 cwts. against 14,401 cwts. in 1850, and 21,068 cwts. in 1849.

Quicksilver, 27,300 lbs. against 179,848 lbs. in 1850, and 1,629,887 lbs. in 1849.

Saltpetre and Nitrate of Soda, 315,520 cwts. against 411,178 cwts. in 1850, and 458,881 cwts. in 1849.

Sulphur, 528,403 cwts. against 578,187 cwts. in 1850, and 710,969 cwts. in 1849.

Turpentine (rough), 275,183 cwts. against 287,874 cwts. in 1850, and 281,471 cwts. in 1849.

TO CORRESPONDENTS.

*Gentlemen who send manuscript to the CHEMICAL RECORD under arrangement for payment are informed that original matter alone will be allowed to count; no abstracts, translations, or adaptations being receivable under the terms proposed. The propriety of this will be obvious.

"Mr. Peter Dennison"—Water crystallises in the rhomboedral system of Weiss and Mohs.

"M. O., Edinburgh."—There are two chlorides of titanium, the sesquichloride, and bichloride, the latter corresponding to titanous acid. The bichloride of titanium is prepared by decomposing an intimate mixture of titanous acid and charcoal, heated to redness by chlorine.

"Inquirer."—Dilute sulphuric acid only attacks lead under the combined influence of atmospheric air; if the atmosphere be excluded, no action takes place.

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"Mr. F. Pearson."—Hydrogen gas is, by some, considered to be a volatile metal; true, it has many of the properties of a metal, but to denominate it one seems to violate unnecessarily some of our most common ideas.

"A Correspondent" states he has been deceived by some one, who, under pretence of being in the medical profession, prescribes, and expects his medicines to be supplied at reduced prices. The party in question has no diploma; and our informant desires our advice as to what he should do.—Cut all acquaintance with the quack, and refuse to dispense his prescriptions.

The CHEMICAL RECORD is published weekly, at its office, 17, Upper Wellington-street, Strand. It may be had through any bookseller or newsmen, and will be regularly furnished from the office to quarterly, half-yearly, and yearly subscribers. Price 5d., stamped 6d.; quarterly, 6s. 6d.; half-yearly, 12s.; yearly, 20s. Payment in advance.

Post-office orders, or orders on a London house, should be drawn in favor of the Publisher, Mr. RICHARD RADCLIFFE FOND, 17, Upper Wellington-street, Strand.

ADVERTISEMENTS.

SOVEREIGN LIFE ASSURANCE COMPANY.

NO. 49, ST. JAMES'S STREET.

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The business of this Company is divided into three principal branches. First,—The Assurance of Life and all the ordinary transactions of Life Assurance Offices. Secondly,—The advancing an amount in connection with the Policy, and the effecting all pecuniary arrangements connected with Life Assurances. And, Thirdly,—The Granting Annuities (both immediate and deferred), and Endowments, upon a plan adopted only by this Company.

THE ASSURANCE OF LIVES.

The following are among the Advantages offered by this Company:—

Tables of Premiums of Assurances, founded upon the most recent return and the combined experience of existing Life Offices, calculated, for the express use of this Company, at the lowest rates, consistent with perfect security.

Three-fourths of the Profits, or £75 per cent., divided, periodically, amongst the Assured; thus affording the security of a Proprietary Company, having a large subscribed capital, in addition to all the essential advantages of a Mutual Company, without the risk and responsibility attending that system.

Such profits may be made available in the three following ways:—by an immediate payment in cash; by addition to the policy; or, by reduction of the premium.

Participation in the profits derived from Policies granted in connection with Loans and Advances.

All Policies issued by this Company are indisputable; that is, the payment of a Policy cannot be disputed or delayed on account of any error or mis-statement in the proposal.

All inquiries as to age, health, habits, &c., are made before the proposals are accepted; the most accurate information being in each case required.

In cases of death by duelling or suicide, Policies which have been assigned are valid to the extent of the interest acquired, and if not assigned a proportion of the premiums received is returned.

Assurances effected for £50, and upwards, upon the payment of one single Premium; or of ANNUAL Premiums; or upon a limited number of payments, or on a gradually decreasing or increasing scale; or the premiums may be paid half-yearly, or quarterly, if more convenient.

The opportunity of obtaining an Advance in connection with the Policy, upon advantageous terms peculiar to this Company.

Assurances effected upon the participating scale, or, if preferred, upon a lower scale, without participation in the Profits.

Where the Assurance is for Life, as large a proportion of the premium as is consistent with safety to the Company allowed to remain on credit for Five Years, at the rate of 25 per cent.

Persons Assured so as to be entitled to the Amount of the Policy, either at a given age, say 60, or upon their death, should it occur previously to such age; thus, by the investment of a small portion of their incomes, securing a provision for themselves in their old age, or for their families, should they die before the specified period.

Persons Assured with this Company may reside in any part of Europe, without extra charge; and, if they have occasion to proceed to any other part of the world, can keep up their Policies upon payment of an increased rate, commensurate with the risk incurred; which extra rate will cease upon their return to Europe, in a good state of health.

No extra Premium charged on the lives of Military or Naval men, unless in actual service.

Whole-of-life Policies are granted to persons assuring the lives of others on payment of an extra rate.

No admission or entrance fee required, nor any charge made for the Policy beyond the amount of the stamp.

Parties desirous of discontinuing the payment of their Annual Premiums may dispose of their Policies to the Company, for a sum of money payable immediately; or, on surrendering them, may obtain a new Policy, without any further Annual Premium, for a sum to be agreed upon, payable at the death of the life assured. The person to whom such new Policy is granted may be entitled, in respect of it, to participate or not in the profits to be periodically distributed.

Persons Assured for Life to the amount of £500, and who have been so for a period of twelve months, have the privilege of voting in the election of two of the Auditors.

Every pains taken to investigate the state of health of the Assured before the proposals for Assurance are accepted, so as to avoid dispute or litigation after death.

Every facility afforded to persons assuring the lives of others, in order to render such Policies effectual securities.

The Company purchases contingent or reversionary Property, grants immediate Survivorships and deferred Annuities, endows Widows and Children, and undertakes all risks contingent upon the duration of life.

Claims paid three months after satisfactory proof of death, or earlier, upon rebate of interest until the specified time of payment.

Policies which have lapsed for non-payment of Premiums renewed upon payment of a fine; satisfactory proof being given respecting the health of the party.

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ADVERTISEMENTS.

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6 in. £0 18 0
6½ in. 1 1 0
7 in. 1 5 6
8 in. 1 11 6

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ROYAL LETTERS PATENT HAVE BEEN GRANTED.

6 in. £2 2 0
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WITH DRAWINGS AND REPORT, FORWARDED FREE.

CAUTION.—An Injunction having been granted by the Vice-Chancellor, in the case of "NASH v. CARMAN," restraining the defendant from making or selling any colorable imitation of the Plaintiff's Stove or Fuel, the public is respectfully informed, that the original "JOYCE'S PATENT STOVE WITHOUT A FLUE, and the PREPARED FUEL," can only be obtained from SWAN NASH, or his authorised Agents. Every genuine Stove has the name and address of the Proprietor on a brass plate, SWAN NASH, 253, Oxford-street.

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FOR HEATING DRAWING ROOMS, PARLOURS, BED ROOMS,
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AND ALL OTHER PLACES REQUIRING ARTIFICIAL HEAT;

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**MANUFACTORY AND WAREHOUSE, 253, OXFORD STREET;
CITY DEPOT, 119, NEWGATE STREET.**

This apparatus is simple and economical, and possesses the following advantages over all other stoves:—1. It feeds itself. 2. It does not emit either smell or smoke. 3. It is perfectly portable, and can be placed on a table or sideboard, or may be suspended, as most convenient. 4. It throws out no dust whatever. 5. It will continue burning from 12 to 48 hours, if required. 6. During that time it does not require any attention whatever.

ITS TREATMENT IS AS FOLLOWS:—

FUEL.—Place a ladleful of the fuel on any fire, and when the fuel arrives at a red heat, which will be in three or four minutes, take the lid off the apparatus, and place the heated fuel at the bottom; then fill the apparatus to its top with the cold fuel, and replace the lid, leaving the regulator open to its extreme point, till the temperature of the room be raised to the degree desired; then reduce it about two-thirds of its aperture, and the same temperature will be preserved so long as the stove shall be in action. To increase or decrease the temperature, open or reduce the regulator; and, to extinguish the fire, close it entirely.

When all the fuel of one feeding is consumed, it will be necessary to reverse the apparatus, in order to displace a trifling quantity of ash which remains, and which, if allowed to accumulate, will check the free burning of the fuel.

For the smaller sizes, the fuel, before using, must be broken into pieces not larger than a walnut.

It is highly necessary to keep the fuel dry.

When the stove is used in a room, a small vessel to contain water should be placed on the top; the heat causes the water to evaporate slowly, and, supplying the air with a moderate moisture, remedies the too great dryness so generally complained of in close stoves. This vessel requires to be kept supplied with water.

The apparatus for greenhouses may be continued burning, by adding fuel as required, being made with an ash receiver at the bottom, with a door, through which the ashes may be raked out.

When the apparatus is used for the first time, a slightly unpleasant smell may be perceived, which proceeds from the lacker, and will go off after the first day. On fresh lighting, a vapour may sometimes issue from the regulator; this is the evaporation of moisture imbibed by the fuel, and will only continue for a short time. The apparatus for rooms are regulated to govern a temperature of 55° to 60°.

CAUTION.—If the stove is used in sleeping rooms, or any place where there is a bad ventilation, a tube or pipe must be attached, which is very simple, and does not affect its portability. It may communicate with the chimney, pass through a window, or any other convenient outlet.

AT THE MANUFACTORY AND SHOW ROOMS No. 253, OXFORD STREET
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Wharf, Sawing, Planing, and Moulding Mills, Belvedere-road, Lambeth, near Waterloo-bridge, are prepared to supply timber and deals, &c., cut and uncut, to any extent, at the current prices of the day. They keep a large stock of WELL-SEASONED FLOORING and MATCH BOARDS, which, being manufactured by themselves, they offer at the lowest remunerating profit. Their extensive saw-mill will be found convenient to the purchasers of their timber, as it can be immediately cut and prepared to suit any purpose.

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The moulding list, containing nearly 800 diagrams, with prices attached, may be had at the Company's mills, or shall be forwarded on receipt of six postage stamps (the amount of the postage thereon).

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(Copy.) Liverpool, 8th September, 1880. Gentlemen.—In reply to your favour of yesterday, we give it as our opinion that cool Muriatic Acid has no effect on the Gutta Percha. We have now had it in use for nearly a year, and we have no doubt, that in a short time, nothing but Gutta Percha will be used for conveying Muriatic Acid. For, although rather expensive at first, it soon pays for breakage and baskets of glass carboys.—Yours truly,

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Bullock's Semola is a most agreeable substitute for gruels; but it may be cooked in a variety of ways, for which directions are given. In packets, 1s., 2s. 6d., and 7s. 6d. BULLOCK, Operative Chemist, 29, Conduit-street; and may be ordered of all Chemists and Druggists, and in the usual way through the wholesale houses.

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VOL. I.

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Finally, it may be observed that the valuable privileges enjoyed by the Members of this Society can be obtained in no other. The Directors therefore confidently recommend it to all classes of the community, and respectfully invite intending Assurers to compare the many advantages offered by it with the principles and plans of others.

J. W. SFRAGUE, Manager.

